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A JOURNAL DEVOTED
 TO BEES
 AND HONEY
 AND HOME
 INTERESTS.

BEE CULTURE

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No. 24.

FROM DR. C. C. MILLER.

THE PROPOSED CONSTITUTION, as given on p. 902, has the approbation of the editor. Very decidedly it hasn't mine, at least on some points. [Well, on what points?—Ed.]

DOUBLING UP colonies, as mentioned by friend Aikin, page 890, seems to be just the thing, and I don't know but it is; but so far, when I've tried it, it didn't pan out well.

S. E. MILLER wants to know, p. 893, why I'd nail numbers to hives instead of carrying them in my head. Well, my head isn't large, and I've better use for what little room there is there.

WHEN SNOW COMES a foot deep in November, as it did this year, there's lot's of comfort in thinking, "How glad I am I got the bees in before this cold weather!" And the deeper the snow the deeper your comfort.

STERN WINTER now has come;

No more the joyful home

Within the busy hive is heard;

Silent, silent, dome.

The bees are all now home,

Till spring to life again has steard.

CRIMSON CLOVER. Michigan Experiment Station Bulletin says: "In England, where this clover is grown with some difficulty, it is said to winter-kill if sown on newly plowed land, but to pass the winter uninjured if merely harrowed in on stubble."

A SLANDER on A. I. Root. *New convert to the beef and hot-water treatment.* "Mr. Root wants me to drink hot water an hour and a half before every meal, and here I've been drinking for the last forty minutes; but I'll be jiggered if I can swallow another drop."

DID YOU EVER NOTICE that bees are unusually quiet directly after a windy time? I don't mean during the wind, for then you can't hear them for the noise of the wind; but I mean in the following calm. I suppose it's because the

wind has thoroughly ventilated the cellar, and the bees are not suffering for fresh air.

THE EDITOR fudges at the idea of my leaving one colony of bees outdoors, and asks, "Why don't you try more?" Because the last time I tried it I tried ten and lost them all. Fudge! yourself. [So I will fudge! so, there. I don't believe you had 'em packed right.—Ed.]

A CONFECTIONER of Neudorf, says *Le Bulletin d'Alsace-Lorraine*, found it convenient to scald the bees that entered his premises. The bee-keepers sued, and the authorities obliged him to screen his premises against the bees, and to keep his empty casks and cans out of their reach.

SOME BITTER EXPERIENCE resulted from putting a second story on top, as described by F. L. Murray, p. 890. A cold spell came, and the bees couldn't keep both stories warm. Since then I put the second story of empty combs *under*, and then it can make the bees no colder. the rest of his practice seems good.

THAT MAP showing the region of small and the region of large hives will be a rather complicated affair when such men as friend Crane want different-sized hives for apiaries not ten miles apart. [That map, I am afraid, will never materialize; for bee-keepers don't respond to the call for information.—Ed.]

I HAVE SAMPLES of the new foundation mentioned on p. 912. It is fine and beautifully clear, the only question being whether the bees will like it more or less therefor. How is that? [That is to be determined; but from experiments made last season for Mr. Weed, the inventor of the process, it seemed that the bees took to it more readily.—Ed.]

A. I. ROOT thinks, p. 910, that his flat-pea roots have not gone the great distance claimed. Perhaps not; but are you sure, friend Root, that you followed the roots to the end? This week I saw a gooseberry-plant that had been very carefully dug. It was a cutting set in the open ground last fall, so it was one season's growth. With ordinary digging the roots might have been 8 or 10 inches long. As it was, they measured 34 inches! [The roots of the

flat pea do go down a great way, doctor; in fact, I have never been able to ascertain how far. All I meant to complain of was that the plants did not stand drouth, at least not on our clay soil, as we had been led to suppose they would. They kept alive, it is true, but they got awful yellow and sickly-looking.—A. I. R.]

IT'S A CLEAR CASE, that the general good demands that bees be kept out of candy-factories, cider-mills, and such places, and it's nearly as clear that the owners of such places should fasten them out rather than to have bee-keepers fasten them in, and there's no reason why bee-keepers of this country should not at once be up with the French in demanding proper laws on the subject.

IN ONE RESPECT, bee-escapes to be left on over night will not be as good in the future as they are now; for when they have been used longer it will become known to some of the light-fingered gentry, and it will be very convenient to come in the night and carry off a few supers. [It will be seldom, I think, that the "light-fingered gentry" will know enough about bees or escapes, even when these articles come into more general use, to know when they are on, and some escapes don't show from the outside. But suppose these chaps do come to know the purpose of the escape: that knowledge would also imply a knowledge of how to get the honey off, escapes or no escapes.—Ed.]

WHEN SOME ONE DIES there's more commotion about his death than about his birth. Just the other way with bee-journals. There's a big hullabaloo at their birth, but not a word said about their final illness, and generally you never hear they're gone till they've been dead a long time. Been several deaths lately. Died very peacefully. [Let's see. Four have died in almost as many months. The publisher of one of them specially requested that I forbear mentioning its demise, perhaps because he couldn't bear to see its obituary.—Ed.]

CAN BEES KEEP gently on the move all winter long in the hive, and remain healthy? Or if at the right temperature, do they lie motionless and entirely quiet most of the time, awaking and moving about by spells? If the latter, how far apart are the periods of activity? Or how does a colony wintered in best condition spend its time in winter, any way? If those who have bees in cellar would take notes this winter, and report, we might have something settled by spring. Friend Taylor could help out. [Mr. R. McKnight has something on this subject in this issue.—Ed.]

SHAMROCK, the national emblem of Ireland, is nothing more nor less than our much-valued white clover. It is worn in honor of St. Patrick, who is said to have plucked a leaf of this plant to represent the Trinity. The botanical name is *Trifolium repens*. It is also called Dutch clover, white trefoil, white meadow trefoil,

creeping trifolium, creeping clover, stone clover, honeysuckle-grass, honeysuckle-clover, and, in Germany, sheep-clover, field, bee, and little clover. The French name is triplet, trefle blanche, or blanc; Spanish, trefol blanco; German, weisser Klee; Italian, trifoglio.

SAY, MR. EDITOR, there's no charge against the Atchleys in that Straw about the series copied from *American Bee Journal*. I think the *Southland Queen* mentioned that it was so copied; but I thought you hadn't recognized it in its new setting. [Why didn't you say the *Queen* acknowledged the source of the lessons? Yes, I find that the Atchleys did give credit to the *American Bee Journal* in their September issue, but not in the October number to which I referred. Now, doctor, as you helped me "put my foot in it," will you help me pull it out? I hereby tender my apology to *The Queen* for not being better acquainted with its columns.—Ed.]

BOTTOM BARS. "If wider than $\frac{3}{4}$ inch," says the editor, p. 888, "there is almost sure to be a useless bee-space between the bottom edge of the comb and the bar." What proof have you, Mr. Editor, that such space will be any worse with $1\frac{1}{2}$ inches than with $\frac{3}{4}$ inch? [Only observation. I have noticed that, the narrower the bar, the more inclined the bees are to build down to and fasten to it. We have a good many bars $\frac{3}{4}$ inch wide, with the combs attached to them. We had a few such comb attachments when the bars were $\frac{3}{8}$ inch wide. We at one time had a few frames with bottom-bars one inch wide. I think there were no combs attached to these. We never, that I remember, had bottom-bars $1\frac{1}{2}$ inches wide; but the foregoing would indicate that they would be worse still.—Ed.]



LARGE VS. SMALL HIVES.



Stop the hive discussion! oh, stop it! I am a ruined man — entirely ruined! or I have made my fortune! After the discussion had gone on some time I saw clearly that I was using too large a hive. The majority in *GLEANINGS* said so, and the majority must be right. So I went to work and sawed off 4 inches from the back end of my hives. Then I settled down and was contented. But I watched

GLEANINGS and the hive discussion with a keen interest.

What is this—this thunder of the warhorse, rushing on to the battle, eager for the cannon's roar and the rattle of musketry—the riders shouting victory! as they hurl themselves on the foe? It is an overwhelming victory for the *larger-hive* men.

Then I was in a bad fix. I could not lengthen out my hives again, but I could do the next best thing—I could give the bees more room in front, so I added 4 feet to my alighting-board.

The discussion went on—always went on—till I made out a large majority for *smaller hives*. What could I do? There was no other way than to cut off 4 inches more.

After this came a wild war-whoop from the West that bore down all before it, and scored a complete victory for the *larger-hive* men. I added 4 feet more to my alighting-board.

Then there came a wail—a plaintive and beseeching wail of sorrow—from the far East—a heart-rending plea for *smaller hives*. I could not resist it, and I cut off 4 inches more.

Then I was called away from home, and could not consult GLEANINGS till I returned. When I did get hold of it I read the discussion eagerly, and there was a large majority for *smaller hives*. So I cut off 3 inches more. After I had completed the work I found I had got hold of the wrong number—not the last one. The latest GLEANINGS gave a big majority for *larger hives*. I added 4 feet to my alighting-board.



SKYLARK'S HIVE.

Then there came to my heart, voices—voices from the far-away South and the far West—voices laden with the perfume of the orange and the nectarine—sweet, tender, gentle voices, pleading for a *larger hive*. I immediately added 4 feet to my alighting-board!

Then for a good many issues the vote wavered, balanced, was a tie, or neither party had a decided majority. Then came another great majority for *smaller hives*, and of course I had

to saw off 2 inches more. This leaves my hive just 2 inches long. Now, if this discussion continues with large majorities for *smaller hives* I shall have to saw off the front door and let the bees camp on the alighting-board. Here is a picture of my hive *now*.

Do you believe this hive will be a success, or am I a ruined man?

FRIEND JONES APPEARS.

I was just about to mail you this splendid experiment of mine when friend Jones came over to see me.

"Hello, Skylark! what does all this mean—the sun-extractor full of brood, young larvæ, eggs, and honey—this large amount of wax, and this great pile of kindling-wood?"

"Well, Jones, I have just completed a great work. You know that GLEANINGS has, for the last six months, had a hive discussion on hand;" and then I told him the whole story.

"I never heard or read of the like of this—you are justly called the 'idiotic giant.'"

"Now, Jones, you know that refers only to the large amount of undeveloped intellect baled and stored away in my mind."

"Yes, truly it is baled, and baled so tightly that it has as much sense in it as there is in a bale of hay. Do you see that plank there? Why didn't you get a dozen or two of these, and saw them into blocks? You could have put in a block, and then a bale of your undeveloped intellect, and then another block and bale, and thus made the hive as small as you pleased. The blocks and bales would act equally well as dummies."

This was so unkind that I could do nothing else than burst into tears.

"Now look here, Skylark, be something of a man. You have lost \$600, but you can get back there. Buy a hundred new hives. Take that thing you call a hive, and cut some off the bottom. Set it, bees and all, in the side of the new hive, and fill up with frames. Put on the honey-boards and top boxes, and feed \$200 worth of sugar. You may be able to build them up by the next honey-harvest; but if you don't do this you are a ruined man."

Now, I don't care what is said against my moral character. The people know I am not a bad man, and won't believe it; but when any one tells them I am a fool, they *will* believe that, for they have often thought so themselves.

ANOTHER WOULD-BE SUICIDE.

The plea for old oil-cans, by friend Butler, on p. 769, is certainly a great advance in apiculture—backward. When you can teach a man to save a dollar and lose three, you are certainly doing him a great service—likewise backward. He pays 20 cents for his cans and 25 for his case—45 cents; a new case and cans costs 80 cents; so he is ahead 35. Now, when he goes to sell, the trouble comes in. No dealer will give as much

for honey put up in oil-cans by half or three-quarters of a cent as he would in honey-cans; so he saves 35 and loses from 60 to 90 cents. Besides, if he attempts to put them up in old oil-boxes, which he can also get cheap, he will lose 6 lbs. of honey in the tare, for they and the cans weigh only 12 lbs.; but the dealer exacts the full tare. An old oil-can is a good deal like a man of bad character—it always smells of it. No honey-producer here, of any note, uses oil-cans for honey. They would not use them if delivered free at the apiary! No, let us be honest; let us send out nothing but pure stock, with every package new, neat, and clean. It is the only way to success in our calling.

CALIFORNIA STATE CONVENTION ECHOES.

Nov. 18 and 19, Prof. Cook presided over a gathering of about sixty earnest and go-ahead bee-keepers in the Chamber of Commerce, Los Angeles.

The forming of some kind of coöperative association, either independent or in conjunction with the fruit-men, was the topic that had precedence at all times over all other topics.

It was figured out during the convention, that extracted honey, on an average, for a series of years, costs $4\frac{1}{2}$ cts. to produce, and that the average crop is 65 lbs. As the present price of honey is from 3 to 4 cts., it is evident the bee-keeper is getting next to nothing for his labor.

The present slipshod method of marketing honey is largely to blame for the low prices.

The citrus fruit-men are so well organized that they can estimate several months in advance the probable number of car-loads of fruit there will be to ship. The honey-producer has never yet been able to tell how much honey has been produced even months after its disposal.

With these and many other facts before them, the association appointed a committee of five to formulate some plans for coöperation in the sale of honey. The committee deliberated several hours, and they reported in favor of independent action, and upon lines similar to the Fruit Exchange, and recommended the forming of a

CALIFORNIA HONEY EXCHANGE.

Their report was unanimously adopted, and the committee continued. Their work is an arduous one, and may take many months in accomplishment; but the staying qualities of the committee lead bee-keepers to hope for success. Geo. W. Brodbeck, W. T. Richardson, R. Dunn, Dr. Millard, R. Touchton, original committee, to which were added Prof. Cook and J. H. Martin.

Abbott Kinney gave an interesting talk upon eucalyptus. There are 150 varieties. The

Robusta, Fisatola, and Eugensitas, are especially rich in the secretion of nectar, and bloom in that portion of the year, from November to March, when bees get but little honey from other sources. California bee-keepers were recommended to plant those species that produce the most honey.

The pepper-tree is not considered a good honey-producer. Where enough of it has been secured, the testimony seemed to class it as dark, and with a peppery flavor. Mr. Wilkin, who has had long experience, and ought to know, says that this peppery flavor comes from a weed known as "blue curl."

Alfalfa is drawing more and more attention as a honey-producer, and in the central portions of the State it is the leading source from which the honey is obtained. It is destined to become the leading honey-plant in many other portions of the State.

Mr. J. S. Harbison sent his compliments to the assembled bee-keepers in the form of an interesting and instructive letter. The following is a sample nugget: "It is safe to say that no product of soil or water, whether fish, flesh, or fowl, or that of fruits in all the varied forms in which they are marketed, is sold at so low a price, relative to excellence, as is that of our highest grades of California honey." "Our sage honey has no superior in any country, and should sell for fully 50 per cent more than it has for the past few years."

Diseases of bees were discussed. The new bee-disease seems to be more prevalent near the coast than in the interior. Henry Otto, in a communication, claimed to have cured foul brood with the new drug, creoline.

Resolutions of respect to the memory of the late L. L. Langstroth, and sympathy to his family, were passed. Also, that the California bee-keepers would coöperate with the bee-keepers of the world in the erection of a suitable monument to the memory of the father of American apiculture.

Nearly all of the old officers were re-elected, and the meeting adjourned.

Will California bee-keepers, who do not receive notices of our meetings, send their address to the secretary with the address of their neighboring bee-keepers? The secretary wishes to keep every bee-keeper on this coast posted in relation to the *California Honey Exchange*.

Jacob Alpaugh, of Ontario, Canada, spent last winter in California, and was so well pleased with our State and our association that he is here now with his whole family, and again attended our meeting. In spite of what John Dryden said at the national gathering, he is bound to annex himself and belongings to Uncle Sam. Plenty of room here, gentlemen; flowers the whole year round, and no frozen toes.

JOHN H. MARTIN, Sec.

Bloomington, Cal., Nov. 20.

LANGSTROTH MEMORIAL.

Langstroth as a Man, Minister of the Gospel, College Professor, Editor, Bee-keeper, and Inventor.

Interesting Reminiscences from His Life History.

Tributes of Praise to His Memory.

A Few Factors that have made American Apiculture what it is.

CONTRIBUTIONS FROM THE EDITOR OF THE BRITISH BEE JOURNAL; FROM THE EDITOR OF THE BIENZENZEITUNG (GERMAN); FROM THE EDITOR OF THE REVUE INTERNATIONALE D'APICULTURE (SWISS); FROM THE FORMER EDITORS OF THE AMERICAN BEE JOURNAL; FROM HIS FORMER PASTOR; FROM CO-TEMPORARIES OF HIS EARLY BEE-KEEPING EXPERIENCES.

REV. L. L. LANGSTROTH.

Palman qui meruit ferat.

THE EVOLUTION OF MOVABLE FRAMES; LANGSTROTH'S GREAT STEP FORWARD.

By Thos. Wm. Cowan, Editor of the British Bee Journal.

It was certainly with profound sorrow that I learned of the sudden death of Mr. Langstroth, and I am sure this sorrow must be shared by a large number of bee-keepers who not only knew him personally, but also through personal correspondence with him. And yet these are few compared to the still greater number who must know him through his work, and who will not only have to mourn his loss as a benefactor, but also as the "father of American apiculture."

Langstroth's name is closely connected with his invention, and this has certainly placed bee-keeping upon an entirely different footing to what it occupied before the advent of the frame hive. There has been a great deal of controversy as to who was the original inventor of the frame principle. It was not till 1851 that Langstroth invented his hive, and frames had already been in use some years previously. They were, however, not of any practical utility, for the hives containing them were complicated, or so exceedingly expensive that they could be looked upon only as luxuries for rich amateurs rather than hives to be used by bee-keepers for business purposes.

Putting Huber's leaf hive—which was undoubtedly the first on the principle of movable frames—and similar hives, on one side as not being suited for general bee-keepers, we come to the hive of Major Munn, who first employed hanging frames in 1834. There was no lateral movement to these, and for examination they were drawn up into a glass case. Nor were they interchangeable, as are the frames

of the present day. The cost of such a hive was from \$35 to \$40, and consequently they could be used only by the wealthy amateur.

In 1841 Prokopowich invented his frame hive, which was a rather remarkable one, and of special interest just now, as the principle he advocated has recently been revived. His hive consisted of two body boxes having frames with wide bars, openings being cut out to allow the bees to pass from one box to another. The super was fitted with similar, but shallow frames. There was a small space admitting of slight lateral movement of the frames, so that they could be drawn out without crushing bees. But the principal feature of this hive consisted in its being constructed for inversion, or being turned upside down. Bee-keepers of the present day will have no difficulty in recognizing this principle, and will, perhaps, note to whom they should give the credit of the invention. Put to practical use, this hive did not answer the expectations of its inventor, and the bee-keeper found that, in strong colonies, it was impossible to remove the frames without crushing bees. Moreover, the frames became so propolized and firmly fixed together that it required a strong wrench to pull them asunder.

In 1843 Debeauvoys introduced his frame hive. This was an improvement upon the others, but it did not come up to what was required. The frames were awkward in shape, and it was difficult to insert them into, and remove them from the hive. They could be taken out only consecutively, like the frames of the German hives of the present day. The hive also, being too complicated, was of no use practically.

□ It was not till 1851 that Langstroth invented his frame hive, which, from its simplicity, cheapness, and practical adaptability to the purposes required, has conferred a lasting boon on bee-keeping. There are no doubt some who think other methods are quite as good; but a very large and daily increasing number of bee-keepers on this continent of Europe recognize that the principle introduced by Langstroth—and first published by him in 1852 in his book on the honey-bee—is the correct one. The opening of the hive at the top, the perfect interchangeability of the movable combs; and the lateral movement of the frames, have given the bee-keeper the most perfect control over his bees, and have more than justified Langstroth's expectations when he wrote the note in his diary in 1851, that "The use of these frames will, I am persuaded, give a new impetus to the easy and profitable management of bees."

We here in Europe have for a long time held Langstroth in the highest esteem; have appreciated his invention, and only a few years ago we—British bee-keepers—did ourselves the pleasure of electing him an honorary member of the British Bee-keepers' Association, as a

recognition for the services which he had rendered to apiculture.

There are not many bee-keepers of the present day who can look back 40 years, or who know how Mr. Langstroth was treated, even by those who were quick to perceive the advantages to be derived from his invention; or how they pilfered his best ideas, and even patented them, and how he was defrauded of his just dues. Nor do they know that these infringements of his rights led to costly litigation which swallowed up all his well-merited gains. As one of your own writers (Prof. Cook) has written in GLEANINGS: "This whole matter is the dark page in American bee-keeping history, and we gladly pass it by without further comment."

Langstroth was not in flourishing circumstances; and although a fund was raised to assist him in his old age, the sum realized fell very far short of what it should have done, more especially when we consider what benefit has been derived from his invention. Although bee-keeping here is not carried on as a business—such as it is in America—it was a real pleasure to British bee-keepers to be allowed to add their mite toward the fund raised. This distinguished man would no doubt have suffered less had he been in affluent circumstances, and able to take change of air at the approach of his periodical attacks of illness; but his modesty prevented him from appealing to his friends. His allusion to this, and his gratitude to God for what had already been done for him, was well expressed in his letter to GLEANINGS in 1892, and will be found on page 609.

My own acquaintance with Mr. Langstroth was through our correspondence. I had always admired his book, not only for the information it contained, but also for the purity of its phraseology, which placed it at the head of all American works on apiculture. In my correspondence with him I found he was not only a great bee-master, but also a thorough Christian gentleman. I have always regretted that, when I was in America, I was not able to see him, owing to his suffering at the time from his head trouble. I have had a good many letters from him, and on my return from Africa he thanked me most heartily for investigating and reporting upon the merits of the bees of Northern Africa. It was only quite recently that I had several letters from him, and among other things he invited me to be present at the meeting of the North American bee-keepers' convention at Toronto. He also asked me to make some experiments in feeding bees with malted milk, which he had been using with benefit to himself. He had been reading my book, "The Honey-bee," and, referring to it, he observed, "What I wrote to you about the malted milk meets with confirmation in

what you say about chyle food. Let the mixture be made with hot honey-water, and how near it seems to come to chyle!" I regret that this was his last letter to me, and that, since its receipt, I have not had the opportunity of trying the experiment. He also told me that he had written confidentially to several friends, and had asked them also to try the experiments; so if any thing comes of it I hope Mr. Langstroth's name will not be forgotten in connection with it.

I hope you will excuse me for writing so long a letter. I could say much more, but I am sure there are others, much more qualified, who have been intimately associated with him, who could give far more interesting reminiscences of him than I am able to do. I was, however, glad to be able to write a few words in testimony of what Mr. Langstroth had done for apiculture, and also to show you the respect we have entertained for him, and the admiration with which we have looked upon him in this country.

We can truly sympathize with our American brethren in the loss which they, as well as bee-keepers generally, have sustained.

31 Belsize Park Gardens, London, England.

[Mr. Cowan refers to a letter of Mr. Langstroth, regarding malted milk and its relation to bee-food. A similar one was sent to us; but at the time he was not ready to have it made public; but since his death we give it here just as he wrote it.—ED.]

I have something to communicate which may interest you. A few nights ago, as I lay upon my bed, a thought suddenly darted into my mind. I have not time to tell you what suggested it, and perhaps I have made a discovery which will be highly important to bee-keepers. Read what Thos. W. Cowan says about the chyle food the bees feed to the larvæ. Then read what Horlick says about malted milk. Now let the powdered article be diluted, not with simple hot water, but with hot honey-water, and don't you see that you have almost the exact equivalent of the chyle food given to the larvæ? This is not an expensive food, and, pollen or no pollen, weather good or bad, inside the hive we can feed what may be the best stimulant to brood-rearing. Given a food of such value, not too expensive, and so easily prepared, and what consequences may not flow from it? I need not attempt to describe—they follow like the corollaries from the demonstrated problem.

I write to you, among other dear friends, to put this thing at once to the test—feed as you know how to do—note its effect upon brood-rearing as you may easily do in a short time. The season is right; the time before the Toronto convention sufficient. Most experiments require much time, patience, etc., before we can arrive at any certain conditions; but if I had bees, and dared to do any thing with them, without too much risk, I should be able to say in less than two weeks, "Eureka!" or "fooled again." I have set so many at work that we must arrive at certainties.

If it is a success I shall give it to the bee-keeping world, at the Toronto gathering. I would dicker



L. L. LANGSTROTH IN HIS 82D YEAR.

with nobody, and have no doubt that I should be amply rewarded.

I am concerned to see that your health is not firm yet. I have found great help from the malted milk. Might it not benefit you?

I say, mix with honey—not sugar—for honey, as you know, is a partially predigested food, according to Prof. Cook and others. L. L. LANGSTROTH.
ayton, O., Aug. 19.

[At the time this was received my health was such that I gave very little attention to business, and among other things this was passed by. If others have tried the feeding as suggested by our departed benefactor, we should be glad to hear from them.—ED.]

LOOKING BACKWARD.

A REVIEW OF APICULTURE IN OLD TIMES AND IN OLD COUNTRIES.

By Charles Dadant.

The men who, instead of destroying their bees, conceived the idea of domesticating them in order to get the crop of honey without so much work, made use of hollow tree trunks; after that they made hives of baked clay, of wickerwork, of straw, of cut stone, and of boards, etc. Unfortunately it was difficult to get the honey without destroying the bees. Besides that, the wax being greatly sought after, especially for use in churches, where no other kind of illuminating material was employed, its value prompted bee-men to suffocate their bees in order to rob them of their stores. I should add here, that, in the greater part of the countries dominated by Catholicism, this massacre of colonies was inevitable, for their laws forced the inhabitants of villages to furnish the churches so many hundredweights of wax every year. It was thus that the destruction of the richest apiaries became a lucrative business, as it is to-day in France, in Gatinais, near Paris, where there are professionals who make a business of laying out apiaries, and who are supplied regularly by persons who raise bees, not for their honey, but for the purpose of selling them when the hives are full.

In proportion to the spread of bee culture, their habitations were improved. Particularly was this the case in Greece, where a knowledge of their habits and the methods of culture was developed.

Della Rocca, in 1790, relates that the apiculturists in the Cycladean Archipelago, in Greece, used long hives of baked clay, which they placed horizontally through the thickness of walls which were made expressly for that purpose. The bottom of each hive was removable, and one could get the honey almost without disturbing the bees, and without being subject to the stings of the bees as they issued from the front end of the cylindrical hive. He showed also a board hive, the frames of which were upheld by means of small top-bars or slats, under

which, and attached to them, the bees built their comb.

Hives with movable frames were still in use in Greece in Della Rocca's time, made after "another fashion; for Liger, in his "Rustic House," printed in 1742, shows the design of a hive, with entrance, made of wickerwork, and furnished with top-bars from which were suspended the frames. The progress of Greece in apiculture need not surprise us when we remember that, 300 years before the Christian era, Aristotle had already published some descriptions of the habits of bees.

If we refer to the ancient writings on apiculture we find that movable frames were not used in other countries until much later. Those who suffocated their bees, or those who sold bees to those who did so, did not have, and do not now have, hives with more than one compartment. Others, finding this practice cruel, or desiring to preserve their colonies, placed surplus-cases on top of the hive-bodies; afterward, hives with several divisions, or "stories," "horizontally divisible." Afterward some were constructed with two vertical divisions; then with three. Huber, toward the end of the last century, in order to study the habits of bees, made what is known as the "leaf" hive, which one might open as he would the leaves of a book as it stands on end.

Finally in Germany, Dzierzon published, in 1846, a description of his hive with movable frames, which opened from behind, and the frames of which were supported simply by little bars.

In the same year 1846, Debeauvoys, in France, published a book in which he described his hive with movable frames which were removed at the side. I have already related in the journals how I became acquainted with Debeauvoys and his hive. It was in 1849 that I visited the Paris exposition, when I saw, at the end of the hall through which I was rambling, a magnificent comb of honey on top of a board hive. Without paying any attention to the rebuffs which I met in my efforts to get near the hive, I pushed through the crowd. The exhibitor, Mr. Debeauvoys, was not there. One of his neighbors was there with an artificial brooder, in which chickens were hatched every day. These little chicks were perched on top of the brooder, and looked quite forlorn in their seeming distress at finding themselves in the midst of such a scene. Their owner said to me that the bee-keeper would be back soon. Sure enough, Debeauvoys, a rather heavy man, with pleasing figure and lively deportment, arrived in a few moments and explained to me his hive and its manner of manipulation. It was a frame hive, opening at the sides, and it lacked nothing to make it practicable except a space between the ends of the frames and the hive; for the frames, having no top-bar longer than

their width, were supported by lengthening the side-pieces, thus forming feet, touching at the ends the boards forming the front and rear of the hive. To get them out it was necessary to separate them from the walls of the hive by spreading the latter a little by means of a thin chisel-shaped lever. This plan succeeded very well so long as the frames were not propolized to the inside of the hive: but after that, their removal was difficult, if not impossible, without breaking the frames; so, although the Debeauvoys hive may have met with some favor in France for several years, and although his book has passed through six editions, the hive was soon abandoned as impracticable. This hapless invention had one unfortunate effect; namely, that of setting French bee-keepers against the use of movable-frame hives entirely, thus retarding progress.

Debeauvoys sold to me the second edition of his book for 45 sous. On returning home I tried to make some of his hives, and transfer some colonies into them. Following the advice of Mr. Debeauvoys I did the transferring by night. It is to be remarked that I received no injury from stings. In the mean time I succeeded nicely. For one or two years I was proud of my hives, and showed them to all who desired to examine their interior. Unfortunately, two or three years after that, we had a very mild winter, not to say a warm one. The fields of rye headed out in January. My hives were filled with brood in March: then a succession of very cold days in April caused the destruction of the twigs of the trees, which were as fully grown as they usually are in June. Then there were seen, instead of green leaves, young shoots blackened by the frost, hanging from the branches which gave them birth. Being too busy at that time to give my bees the attention they actually needed in order to regain the lost ground, I lost them all; and from that time on I had nothing more to do with bees until my arrival in the United States, in 1863.

Having procured the works of Langstroth, Quinby, and King, I immediately perceived the immense superiority of the movable bottom, and the space between the ends of the frames and the inside of the Langstroth hive. There arose, at this time, a discussion concerning the Langstroth patent, as to the priority of the invention of the frame hive with a space between the frame and the sides. King pretended that Berlepsch, a German bee-keeper, had anticipated Langstroth. But it was proved that Mr. L. had applied for a patent about six months before Berlepsch had invented his hive. Besides, the Berlepsch hive, although having been generally adopted in Germany and Italy, could not for a moment stand any comparison with that of Langstroth. Its bottom-board is fixed; it opens behind, so that, if one wishes to see the front frame, he finds it necessary to take them all

out. The frames of the Berlepsch hive, being taller than they are broad, its surplus frames are smaller; and, besides, they are very limited in number, as the bottom of the hive is not movable.

In spite of the ill will which certain owners of the German hives showed, a comparison between the two hives, the Langstroth and Berlepsch, being entirely to the advantage of the former, it has gained a footing in Europe. I am proud to have been the first to describe and recommend it in France, where its distinguishing features—a movable bottom, and frames with spaces between them and the sides of the hive—have been adopted by all advanced bee-men.

The name of Langstroth is known and revered, not alone in North America, but in France, Switzerland, Belgium, Italy, and even in Russia, where the French edition of "Langstroth Revised" has been translated into Russian, in which language it has reached its second edition. Many apiculturists having described the qualities of our lamented friend, it suffices me to say that my son and I are happy to have been deemed capable by him to put his book, which was so far in advance of the times at the date of its first publication, abreast with all that has been achieved since; and above all to have succeeded in spreading its renown in all countries where the English language is known, and where he is considered, as well as in the United States, as a superior man, distinguished for his intelligence, his knowledge, his disinterested and unceasing work directed toward apicultural progress, to which he had devoted his life.

Hamilton, Ill.

HOW LANGSTROTH WAS REGARDED IN GERMANY.

By C. J. H. Gravenhorst, Editor of "*Deutsche Illustrirte Bienenzeitung*."

It was with sincere regret that I learned of the death of Lorenzo Lorain Langstroth. Every bee-keeper in the Old and New World, who knows what this grand and noble American apiarian has done for advancing modern bee-keeping, will feel as I do, and not the least my brother bee-keepers in Germany.

Many years ago, when the late Samuel Wagner founded the *American Bee Journal*, I became a reader of and contributor to it, and in that way I learned what Langstroth had done and was doing to encourage bee-keeping, especially when I received the first edition of his classic and renowned work, "The Hive and Honey-bee." I remember as if it were but yesterday when I received the book, and I would not lay it down till I had read the last word in it. How many times I have since read those wonderfully written chapters, the 11th, on the loss of the queen, and the 13th, on "robbing,

and how prevented," and others. I thought I could do nothing better than to acquaint my brother bee-keepers in Germany with Langstroth and with his system of bee-keeping. So far as I knew, no one in Germany had read any thing of value about American bee-keeping, up to that time, in our bee-papers. Only Pastor Kleine, at Luethorst, had received a few copies of the *American Bee Journal*, from Samuel Wagner. While visiting Kleine I saw the *American Bee Journal* and Langstroth's book, "The Hive and Honey-bee." I translated some articles from those journals, and now and then some chapters from the book mentioned, for German bee-papers. Later (thirteen years ago) I founded the *Deutsche illustrierte Bienenzeitung*, and thought I must do more, especially as American bee-keeping was making such extraordinary progress. In the first annual volume of my journal, I gave, in one of the first issues, a sketch of the life of Langstroth, with his portrait. I did the same in the first volume of my "Imker Album," that contained sketches of the most renowned bee-keepers of the world. In the third and fourth edition of my manual of bee-keeping, "Der praktische Imker," one will find a portrait of Langstroth, as well as a representation and description of the Langstroth hive. Since that time, as many German bee-keepers have helped me in that line, I can safely say that American bee-keeping and its great promotor, L. L. Langstroth, are well known in Germany.

And now let me say right here, Langstroth was one of those bee-keepers to whom is due a place in the front ranks of bee-keepers the world over. He is, of course, the Dzierzon and Huber of America. His invention of a most practical bee-hive has, especially in America, raised bee-keeping to a very high degree. If I am not wrong, Mr. Langstroth gave his hive to the public in 1852, seven years later than Dr. Dzierzon did his movable-comb hive; but there is no doubt that Mr. Langstroth made his invention without knowing any thing concerning what Mr. Dzierzon was doing; otherwise such a Christian man as Mr. Langstroth has always shown himself to be, both in his public and private life, and in his masterpiece, "The Hive and the Honey-bee," would have given honor to whom honor was due. The difference between his hive and that of Dzierzon proved that plainly.

The Dzierzon hive has fixed top and bottom boards, and two doors (sometimes one) on one or two sides. This hive is longer or higher than wide, according to the standard frames, which are nearly as large as the standard Langstroth frames. If side-storing of the honey is preferred, the Dzierzon hive contains 16 frames side by side in a so-called "lagerstock." On the other hand, the hive has two or more stories in a "staenderstock." All frames in this German

hive hang with the shorter sides above and below, in this way:



Most of the German bee-keepers are of the opinion that bees winter better, especially outdoors, by the use of frames in which the bees may have their winter stores above the cluster.

It is a matter of fact, that most of the bee-keepers in Germany, Austria, Hungary, and German Switzerland, use Dzierzon hives; but in all other lands the Langstroth hive is more in vogue. I may say without exaggeration, that most of the bee-keepers of the world use the Langstroth hive, and therefore are deeply indebted to the great American. But we, though not using his hive, are, notwithstanding, not less indebted to him, as he was the man whose invention developed bee-keeping in a great measure in such a way that we have learned from him and his disciples in many cases.

Wherever one hears the best names of bee-keepers spoken by the bee-keeping world he will never miss the name of Rev. L. L. Langstroth.

Wilsnack, Germany, Oct. 28.

LANGSTROTH'S INVENTION IN FRANCE AND SWITZERLAND.

HIS BOOK THE "MASTERPIECE OF APICULTURAL LITERATURE."

By Edward Bertrand, *Editor of Revue Internationale.*

Through Mr. Dadant I had already received information of the death of Mr. Langstroth when your letter of Oct. 15 arrived. It was not without deep regret that I learned of the departure of that distinguished man to whom we owe so much; and I can assure you that, on this side of the Atlantic, the loss which the friends of the bee have just sustained will be no less keenly felt than in America; for Langstroth is considered everywhere, in Europe as well as with you, as one of the fathers of modern apiculture. Francis Huber, my fellow-countryman, prepared the way by discovering the secrets of the habits of bees; and, fifty years later, Langstroth, in the United States, and Dzierzon and Berlepsch in Germany, crowned those efforts by giving to apiculturists systems of hives which have revolutionized the keeping of bees. But the manner in which the American inventor solved the problem of movable frames and the inspection of colonies, caused it to surpass the German method; and it is his hives and methods which have been adopted in the greatest number of countries, and which give the most brilliant results. I have, for my part, experimented with both systems; and, without contesting certain merits in the Berlepsch model, I give the preference to the American hive, with loose bottom, and stores above.

But it is not alone for his useful invention that the memory of our great Langstroth deserves to be handed down to posterity. He has written an admirable book in which the elevation of the thoughts equals the extent of the writer's erudition as well as the richness of his observations, and which will remain the masterpiece of apicultural literature. Thanks to Mr. Dadant's translation, of which I am preparing a second edition, this work is now known to French-speaking apiculturists; and it has been produced in Russian through the labors of Mr. Kandratieff.

Our dear master's life had a glorious end, and one well worthy of it, as he died preaching the word of God. Let us preserve his memory in our hearts.

ED. BERTRAND.

Nyon, Switz., Oct. 27, 1895.

SOME RECOLLECTIONS OF LANGSTROTH.

By W. F. Clarke, formerly Editor of the *American Bee Journal*.

My first knowledge of Mr. Langstroth by name was in the early winter of 1863. I had engaged to edit an agricultural journal which was to be started in Toronto, Jan. 1, 1864, to be called the *Canada Farmer*; and on surveying the field of my prospective duties it occurred to me that there was one branch of agriculture about which I knew nothing whatever—namely, bee-keeping. I at once resolved to read up on the subject; and on making inquiries for the best works to peruse I met with "Langstroth on the Honey-bee." I lost no time in plunging into its pages, which I found replete with interest. The book read like a fairy-tale. I felt as if I had been introduced into a new world. Up to this time my knowledge of the bee did not stand beyond Dr. Watts' juvenile and moral song, which commences, "How doth the little busy bee!" I now felt that I must explore for myself the new world which had been opened up to me. Toward spring I corresponded with Mr. J. H. Thomas, of Brooklyn, Ontario, and bought of him a colony of Italian bees bred from stock he had obtained from Mr. Langstroth. This was my initiation into what Mr. W. Z. Hutchinson, as I think rightly, calls "the pleasant occupation of tending bees," the fascination of which is easier felt than told. If it were only for the gratification I have derived from this pursuit as a scientific pastime for more than thirty very busy years, I should feel that I owed Mr. Langstroth a large debt of gratitude.

I first met our lamented friend face to face at the bee-keepers' convention held in Cincinnati during the month of February, 1871, of which he was elected president by acclamation. His health was poor then, and he accepted office as a compliment, on the condition that none of the active duties of the position were to be performed by him, as he did not feel that he had

physical strength adequate to the task. The convention unanimously consented to this condition. I had a great deal of talk with him about the suit for infringement of his patent rights, in which he was then engaged. He had a deep sense of wrong, and felt most keenly the attempts which were being made to deprive him of what he believed to be his just dues. It cut him to the quick, that the very man who was doing the most to deprive him of the benefits of his movable-frame-hive invention should have placed him before the meeting as an object of charity by starting a \$5000 subscription fund on his behalf. He said he did not want charity; all he asked was justice.

My intercourse with Mr. Langstroth at this time led me to form an exalted estimate of him as a man of high honor, scrupulous integrity, and unbending rectitude. The spirit showed by him toward those who were injuring him was admirable. There was no harshness, no display of unkind feeling, the predominant thought being to have his cause triumph because it was right. There was a lofty dignity and moral majesty about him which impressed me very deeply. I never met him again until in September last at the Toronto convention. He recalled the events that transpired at the Cincinnati convention, nearly a quarter of a century before, and was most profuse in his expressions of gratitude to myself and Mr. A. I. Root for the efforts made by us to have him righted on that occasion. It was a pathetic parting we had at the close of the convention, like that of the Ephesian elders with Paul. They sorrowed most of all that they should see his face no more; and I had the same feeling as I bade him adieu in Toronto, though I did not think the end would come so soon; nor did he. With improved health he was looking forward with almost youthful buoyancy of hope to doing some further work on which his heart was set. But it was not to be. He returned home to die, amid scenes the most hallowed and dear to him, and while engaged in the work he most sacredly loved.

"The weary wheels of life stood still at last." As a Canadian I am proud and glad that the last public tribute of respect and honor was paid to him, not only on our soil, but amid the classic surroundings of our educational department, where so many busts of departed greatness in literary and philanthropic walks of life are gathered; and I shall take pleasure in moving, at the next meeting of the Ontario Beekeepers' Association, that permission be sought from the government to add a bust of Langstroth to the collection. I feel sure that permission will be readily granted.

Though I met Mr. Langstroth on only the two occasions to which I have referred, I had correspondence with him at various times as circumstances arose which prompted it. When,

at the request of the North American Bee-keepers' Association, I took charge of the *American Bee Journal*, and removed it from Washington to Chicago, his daughter, Mrs. Cowan, wrote me, at his request, a letter of approval and encouragement, his head trouble being then upon him, so that he could not write himself. He also promised help in carrying on the journal should his health permit. Shortly afterward the sickness and death of Mrs. Langstroth took place, which were a sore trial to him. It was a merciful mitigation of his affliction that his health was so far restored to him that, during the ten day's illness of his beloved partner, he was able to be with her every night but one. The letter he wrote me in announcement of this sad event was a gem in its way. Some passages in it were so beautiful and touching that, though not meant for publication, I took the liberty of inserting them in the *American Bee Journal* for March, 1873. I think it would be an interesting feature in its symposium if GLEANINGS were to reproduce that letter, as it gives a lovely picture of our departed friend's bearing under one of the sorest afflictions that can befall mortals in the present life.

Mr. Langstroth belonged to a class of bee-keepers who are numerous in Great Britain, but comparatively scarce in this country, who engage in the pursuit, not so much for the money there is in it, as for the interest they feel in observing the nature and habits of these wonderful insects, and trying to uplift and ennoble the occupation as worthy a place of honor among intelligent and educated people. It is common in some quarters to despise and disparage this class of bee-keepers; but for what reason I can not divine, so that it is almost necessary to defend the memory of this great and good man from the undeserved obloquy of not being a specialist in this line. He was one of those who do not believe money-making to be the all-important business of human beings in this world. Though he did not enrich himself by keeping bees, he performed services for others, the value of which are untellable. It is a poor return for these services which have done so much to ennoble bee-keeping, both as a science and an art, to belittle the performers of them because they do not count their colonies by the hundred nor their gains by the dollar-and-cent standard. Practical bee-keepers should hail those of the Langstroth class as allies and helpers, and be glad that any and all, according to their several ability, should aid the pursuit.

As a writer, Mr. Langstroth wielded a powerful and graceful pen. He was a master in controversy, and some of his articles of this character, that are on record in the earlier volumes of the *American Bee Journal*, are models of their kind. He did not fear to call a spade a spade. He dealt in no hollow compliments;

and, while respectful and courteous toward all, he spoke the unvarnished truth as he believed it, without fear or favor. Nothing low or vulgar ever marred his writings. There was a charm about his style that could not fail to interest all who read them. A memorial volume, embracing some of his best articles, along with biographical sketches from those who knew him best, ought to find ready and large sale among bee-keepers. I am glad to know that abler hands than mine are to set forth the merits of his invention, and what it has accomplished in the apicultural world; also its relative value as compared with the inventions of others who came before and after him.

I have tried to fulfill the task assigned me, and give "some recollections of Langstroth," and only regret that, owing to my few opportunities of personal intercourse with him, they are so meager. It would be easy to enlarge on the many estimable qualities of our departed friend; but I fear to encroach further on valuable space, and will only add in the words of another: "If I have done well, and as is fitting the subject, it is that which I desired; but if slenderly and meanly, it is that which I could attain unto."

Guelph, Ont., Nov. 1.

◆◆◆ "LANGSTROTH, THE NESTOR OF AMERICAN APICULTURE,"

WHOSE NAME IS KNOWN AND WHOSE WORK IS
APPRECIATED ALL OVER THE WORLD."

By Thomas G. Newman, former Editor of the
American Bee Journal.

This is the subject assigned to me for comment. Other themes presenting the many noble characteristics of the late brother will no doubt be ably introduced by those having them in charge, and so I shall enter at once upon my topic.

Father Langstroth's invention of the movable frame, in 1852, was so perfect, when announced, that time and experiments have not improved it. While in different countries and climates its dimensions have been modified somewhat, yet the movable frame in use to-day, the world over, is substantially the same as Father Langstroth introduced to the world after he had privately experimented and severely tested it, in 1852.

That invention completely revolutionized the pursuit of bee-keeping in all the civilized countries of the earth, and gave it such an impetus that it has now become one of the leading agricultural industries of the world. Its inventor's name will endure as long as bees are cultured, and will be remembered and revered by generations yet unborn.

His classic book, "The Hive and Honey-bee," stands at the head of bee-literature, and has been translated, in whole or in part, into all the principal languages of the world; and on the

natural history and habits of bees is a standard authority wherever bee-keeping is an industry of importance.

Sixteen years ago, when I attended the bee and honey exhibitions in Europe it was demonstrated to my observation that movable frames were universally used; and whenever the inventor's name was mentioned it was cheered to the echo. In England, Scotland, Switzerland, Germany, Austria, and Italy, I found enthusiastic admirers of Father Langstroth, who truly loved him for his apicultural inventions and his pure and benevolent character.

Unfortunately Father Langstroth was not a millionaire, nor did he possess enough in his old age to secure even the necessities of life. He had been too liberal and unselfish in his prime to even think of age or want.

In each of the countries before named, it fell to my lot to state these facts when in the assemblies of representative apiarists. To illustrate the esteem in which he was held, let me mention a few instances.

At a banquet in London, given in honor of the American representative to the bee-conventions of Europe, a toast was proposed to the Rev. L. L. Langstroth for his apicultural inventions and genius. Being called upon to respond to the toast, I referred to the misfortune of his poverty, and immediately, in true, large-hearted English style, the whole assembly rose to its feet, cheered his name, and a good contribution was then and there made and sent to Mr. L., to cheer his heart and clothe and feed him during the approaching winter. There were present, not only representative English and Scotch apiarists, but many from Continental Europe, and among these there were four or five editors of bee-periodicals. All were of one mind, doing honor to our loved American bee-master, who has just passed through the gates of Paradise.

At the other bee-conventions on the continent, similar scenes were enacted, particularly in Switzerland and Bohemia. At the latter, the Rev. Dr. Dzierzon (the Nestor of German apiculture) forcibly stated his admiration of Mr. Langstroth, and sent a loving message to him by the writer. Among his other enthusiastic admirers I may mention the Baroness of Berlepsch, Augustus Schmidt, editor of the *Bienenzeitung*, Prof. Sartori, Herr Vogel, Hilbert, and Carl Gatter.

Prof. Butlerow, of Russia, Councillor of the Government, was the bearer from St. Petersburg to Prague of the imperial distinction of the Order of Santa Anna, by order of the late Czar, to confer the same upon the Rev. Dr. Dzierzon for his apicultural research and inventions, and that Russian dignitary was pleased to couple the name of Langstroth, of America, with Dzierzon, of Germany, and others, as the greatest men living in the api-

cultural world of the day. He then conferred the decoration on Dr. Dzierzon, with the usual ceremonies.

But space forbids further narration of the many interesting incidents within my knowledge, in proof of the topic assigned to me. I will merely add that the educated and most prominent apiarists of the world, with one accord, attribute to Father Langstroth this well-earned honor: That in his life, character, and labors, he was one of Nature's noblemen—a modest, unassuming, honest man. He has fairly and fully earned the grand distinction of being the "Prince of Apiarists—the Huber of America!"

We should all realize that it is the greatest of all earthly privileges, as well as among the highest of all human duties, to commemorate the life, example, and services of one so devoted to the advancement of apiculture as a science and a pursuit.

He was as confiding as a child, and therefore an easy prey for the unprincipled. At Toronto, the last time he appeared at a bee-keeper's convention, it was a grand treat to listen to his loving words, so entertainingly uttered. Even food was forgotten, though placed before him, when talking with friends and companions.

Some of us donated enough to take him to Toronto, and there a liberal donation was made him. His last letter to me began with these words: "Dear Friend: I can almost see you, and hear your generous remarks concerning me before the Toronto convention," showing how he "lived over again" the pleasant scenes of life, while waiting for the 'change' which should call him to the 'home over there.'" Patiently, lovingly, confidingly, he might say:

Only waiting till the shadows
Are a little longer grown;
Only waiting till the glimmer
Of the day's last beam is flown;
Then, from out the gathered darkness,
Bright and deathless stars shall rise,
By whose light my soul shall gladly
Tread its pathway to the skies."

Chicago, Ill., Nov. 18.

FROM MR. LANGSTROTH'S PASTOR.

Rev. W. F. McCauley.

I was intimately acquainted with Mr. Langstroth for the last eight years of his life, he being a member of my congregation in Dayton for over seven of those years. It will be impossible, in the limits allowed in this symposium, to do more than to give some general statements concerning this remarkable man.

He came to Dayton in August, 1887. I last saw him in September, 1895, on the occasion of his visit to Toledo, made while *en route* to the Toronto convention. Twice in the period indicated he suffered from his peculiar physical ail-

ment and its resulting melancholia. The first of these periods lasted about three years; the second terminated not many months before his death. He derived some temporary help from a physician in the early part of his residence in Dayton, and said joyfully, "I think I am fighting a winning battle." It did not so prove in the end; but we all rejoiced that, after all, the close of his life was free from shadow and gloom. The trouble referred to did not seem to affect his intellect, but was of the nature of depression of spirit, by which he was unfitted for his accustomed tasks. When in the enjoyment of entire health no one could be more active or companionable. Did space permit, instance after instance might be given to show the heartiness of his disposition. Geniality and earnestness were companion traits or ingredients of his nature, and it was delightful to have an intimate association with him. Though he grew to be nearly five years past fourscore, yet there was still much of the dew of youth upon him: he was like a tree bearing simultaneously blossoms and ripened fruit.

He had a breadth of culture and of intellect that marked him as a man among men. He deserves the respect of all, not alone for his achievements along the line of bee culture, but for his general ability and high character. This is the estimate of a friend who knew him in his various moods, and never found him other than true and lovable.

He was frequently reminiscent, and would quote fine passages; or relate anecdotes, of such character that the point illustrated would remain a long time in the mind. He was never unreasonable, but by nature was intense, and that quality endeared him to the writer. He uttered his convictions in unmistakable phrase, and gave others the same privilege. This enabled one to "get on" with him in famous fashion, for no time was wasted in false motions. Kindliness and straightforwardness, discretion and courage, and these dominated by heartfelt devotion to God and his truth, threw about him an atmosphere of light and warmth.

In all the foregoing there is no exaggeration; the effort has been to seek phrases that would convey a just conception of a character honored by one generation, and whose virtues should be preserved for the contemplation of another.

In the Y. M. C. A., in the pulpit occasionally, and in private life constantly, he sought to employ his strength to accomplish good. He was unselfish, and planned busily for the good of others. His life was broken into segments by physical affliction, but he did his best with his opportunities; and through the scattered clouds we can trace the shining arch to its base at the triumphant close of his days. He could say of his heavenly Father:

Better to me than all my hopes,
Better than all my fears,

He builds a bridge of my broken works,
And a rainbow of my tears!

His death came suddenly, like the setting of the sun, which lingers in the horizon, and then quickly drops from sight. His setting, too, was in full-orbed power. He was assisting the pastor of the Wayne Avenue Presbyterian church in the communion service, with three generations of his descendants in the congregation before him, when the moment came that terminated his earthly career—but his "works do follow him." It was the church that his son-in-law, Mr. H. C. Cowan, had helped to found as a Sunday-school, and of which the writer had been pastor. That church had been the subject of Mr. Langstroth's deep interest, and it was hallowed anew by his death. It would be fitting if the church could somehow be made a Langstroth memorial. It must not be forgotten that he was a minister of the gospel, and formerly a pastor. It seems most remarkable that the calling he was compelled to forego in an active sense for so much of his life should receive the benediction of his parting breath. It was thus that he died "in the harness," and left after him an example of devotion in service for all to emulate. His death became an illustration of that providential care which adds symmetry to every devoted life, and satisfieth the longing soul.

Toledo, O.

REV. L. L. LANGSTROTH.

THE MOST WIDELY KNOWN, LOVED, AND APPRECIATED BEE-KEEPER IN THE WORLD;
AN ALL-AROUND GENIUS; THE INVENTOR OF THE FIRST PRACTICAL
MOVABLE-FRAME HIVE.

By Prof. A. J. Cook, *Author of the "Manual of the Apiary."*

It was with keen regret and sadness that I heard, on October 10th, that our old friend and benefactor—Mr. Langstroth was the benefactor of every bee-keeper—had passed to his reward the Sunday before. I had recently had two letters from him, which spoke of health, vigor, and strength. We all know of his long journey to attend the Toronto meeting; and a very dear mutual friend wrote me but a few days before that he had entertained Mr. Langstroth at his house, had taken him for a long ride, and that he seemed very bright and vigorous, and talked of his friends with so buoyant a spirit, and of affairs with such keen mental zest, that, though nearly at the eighty-fifth milestone, yet he seemed likely to see yet many days of usefulness and activity before he passed to the great beyond. Thus it was that the news came to me as a shock: and with the thousands of others all over our great country, I bowed my head and heart with grief and sorrow that I should see the kindly face and hear the sympathetic voice no more.

It is certainly true that the world has never had a bee-keeper who was more widely and justly known, loved, and appreciated than our dear father Langstroth. And so the world never lost an apiarist who will be more widely and sincerely mourned.

I had visited our beloved and venerable friend repeatedly at his own home, and had entertained him at my home on several different occasions. I grew to love him as a dear personal friend, to admire him as a man of very rare native ability and acquirements, to venerate him as a man of the loftiest Christian character. Few persons ever suffered more cruelly at the hands of unscrupulous, selfish, designing men, and yet his great loving heart seemed to harbor no thought of revenge or unkindness. He exemplified, in a manner rarely witnessed even among good men, Christ's words, "Love your enemies, and pray for them that despitefully use you and persecute you." Indeed, he was a rare example of one whose life was wholly permeated and glorified with the spirit of the Master.

There are many men who excel in some one line of work. They may have a genius at invention; they may be wonderful at painting word-pictures, and thus gifted in the art of exposition; they may possess great intellects, and thus become great scholars; they may have that beautiful equipoise of character that insures just judgments, and makes them broadly and grandly influential. But how rare to find these qualities united in one and the same person! Mr. Langstroth was all this. His keenness of vision as an inventor was remarkable; his power as an investigator and writer was graphically illustrated in his admirable work on the honey-bee; his ability and scholarship were known, recognized, and appreciated by all who knew him; while his beautiful character, that thought no evil, could hardly understand or believe that others were selfish, calculating, and willing to take advantage of his unsuspecting nature. His was a great mind, his a true loving heart, he that noblest work of God, a true, sweet, Christian character.

To-day we know positively that Mr. Langstroth was the inventor of the first practical movable-frame bee-hive. The German top-bar hive, with combs fastened to the side, was a previous invention, as was the close-fitting frame of Major Munn; but neither of these was known to him previous to his own invention, and each was as inferior to his as is the sickle to the self-binder. Mr. Langstroth had the vision to see a great need, and the genius to supply it; and in so doing he shared the honor and glory of very few men—that of revolutionizing a great industry, and changing entirely its methods. He did more than this; he did his work so well, that, though nearly fifty years have rolled by, yet no one has been

able in all that time to improve upon his invention in any essential particular. What a compliment to him, that his hive, essentially as it was given to the world nearly half a century ago, is to-day the hive of nearly all our brightest and most successful bee-keepers! No one can gainsay the fact, no one can deny the glory, of such an accomplishment. I can not find a parallel case in all the history of inventions. The sewing-machine, the reaper, the steam-boat, the railroad locomotive of to-day, could hardly claim relationship with the first ones given to the public; indeed, we are told that no one can afford to run a steamship of a score of years ago.

Mr. Langstroth was also an author of the highest type. His "Honey-bee" will ever remain a classic in bee literature. The incisive style, the pure vigorous English, as well as the fascinating subject-matter, alike charm the interest and awaken the deepest admiration. Like another classic, Darwin's "Voyage Around the World," he opens up to us the secrets of investigation, and we are charmed as we discover how his mind worked its way upward in the realms of invention and scientific discovery, and it is equally true that his honesty was as thorough as was his genius at invention or his ability to describe. He was no plagiarist, either as a writer or inventor. Even the thought of claiming the work or thought of others was revolting to him. Had the same been true of others, Mr. Langstroth would have died a rich man. In all his writings he was overscrupulous and particular to give every possible credit to others.

As a student in college, Mr. Langstroth stood among the first. As a teacher in Yale College, his *alma mater*, after graduation he won the respect of all his colleagues. As a preacher he was eloquent, persuasive, convincing. It was my privilege to hear him preach on several occasions, and he always held the closest attention of all his hearers. Except for the mental affliction that weighed him down for so much of his life, he would certainly have gained wide fame as a pulpit orator. He was an intimate friend of the great Henry Ward Beecher, whom he resembled not a little in personal appearance and style of oratory.

Socially Mr. Langstroth was very exceptional. Time always took flight when he became a companion. An hour or even more was all too short for the meal-time when he sat at the board; and the hours for sleep were crowded at both ends of the night when he was an inmate of the home. His wide reading, his knowledge of history, his acquaintance with men, his thorough knowledge of the Bible, and his practical adoption of its teaching and spirit, all combined to make him a delightful and most valuable and entertaining companion.

His lifework specially endeared him to bee-

keepers. His invention and discoveries were a special gift to every progressive bee-keeper the word over. He personally contributed to the success and happiness of this entire class. No wonder that they loved him with genuine sincerity. No wonder that they mourn his loss with sincere sorrow. It is good that he could be present at the last meeting of the North American Association at Toronto. It will remain with us a pleasant memory that he died while administering the communion, and commending the love of the blessed Master, whose love came with such a rich effulgence in his own life, and through him spoke as a blessed benediction to all who knew him or came under his beneficent influence.

Claremont, Cal.

RECOLLECTIONS OF L. L. LANGSTROTH.

AN INTERESTING INCIDENT; LANGSTROTH AND HIS STATEMENTS CONCERNING THE HEDDON HIVE.

By Thaddeus Smith.

It was early in the sixties, or it may be a few years before, that I first heard of Langstroth's book on the honey-bee, and of his moveable-comb hive, and, being previously interested in bees, I procured the book and the hive as soon as possible. I was probably the first to introduce the Langstroth hive in Kentucky, sending to Cleveland, O., for them. I now have some of those hives on Pelee Island, Canada, that I took there with me. However, they are not in use.

Since then the name of Langstroth and hive have been familiar household words in my family; but I never had the pleasure of meeting him until at the late convention at Toronto. I there made his acquaintance, and, being afflicted with deafness, like him, he seemed drawn toward me, and one day at the hotel he invited me into the parlor to have a talk with him. When we had discussed our ailments and the best aids for hearing, etc., the talk turned to other subjects. He told me that he felt perfectly well—strong in body, and clear in mind. Talking about being able to hear some voices much easier than others that might be of a higher pitch, he told me of an incident of a deaf woman he was once in his ministry called upon to pray with. He said he had a very strong voice, and that he knelt down close by the side of the woman, and spoke slowly and distinctly; and when he was through, the woman declared that it was the first prayer she had heard in many years; that it was almost miraculous, and she thought her hearing was returning. But he told her no; it was only the way he spoke.

He spoke of bees and hives, and mentioned the injustice done him by some because he approved and recommended the Heddon hive as an improvement upon the original L. hive. He

said he was even accused of being in his dotage, or was bought by Heddon because Heddon paid his traveling expenses to visit him, and was indignant over the matter. After a pleasant half-hour's chat we parted, and he wrote to me, after he reached his home; and in a few days after receiving his letter I saw the announcement of his death.

Midway, Woodford Co., Ky., Dec. 2.

LANGSTROTH'S MESSAGE TO THE SUNDAY-SCHOOL CHILDREN.

By S. T. Pettit.

The bee-keepers of America lost a good man and a friend when dear old Father Langstroth died. His influence was firm on the side of the Holy Bible and Christianity. His noble tender heart overflowed with love for the human race.

When in his presence I always felt an inspiration that I must be a better man in future. At our last convention in Toronto it was my privilege to have quite a long talk with Father Langstroth on religious subjects; and when we got on the subject of Sunday-schools his face seemed to glow as we talked together. And when he found that it was my official duty to visit all the Sunday-schools in the township in which I live, he, with warm animation, said, "I have a message I want you to take to the boys and girls as you visit your schools: First of all, impress upon their tender hearts that the Bible is the *very* word of God—the infallible, immutable word of God; that it is the very voice of the Holy Spirit speaking to our hearts. Then you can show them the necessity of committing largely of that word to memory. Tell them that they can easily do this when young, and that what they learn when young will stay by them; but what is learned when old is soon forgotten and lost."

Then he recited some beautiful poetry, some of which is of his own composition, composed when he was young. He gave these with great ease, accuracy, and beauty. "But," said he, "what I learn when old just goes from me—is forgotten and lost."

Belmont, Ont.

LINES ON THE DEATH OF FATHER LANGSTROTH.

The "Grand Old Man" of apiculture is no more;
Gone is the look of suffering he often wore;
The weary aching head to trouble oft a prey,
Rests in the light and life of heaven's eternal day.

Grand was he in physique, but grander far in mind,
Grandest of all in love and service to mankind;
Free from low aims, unselfish, bent on doing good,
Till, past fourscore, a pillar in God's house he stood.

We never grieve when we behold a shock of corn
That, fully ripe, is to its garner borne;
We raise the song and shout of gleeful "harvest home,"

And fill with strains of music heaven's Empyrean dome.

Thus, like a shock of corn full ripe, our aged friend Attained, 'mid hallowed Sabbath scenes, his journey's end,

While those who watched his exit, with tear-moistened eye.

Soliloquized, "Let me like Father Langstroth die!"

If "Death ends all," we never more again shall see That form erect with conscious moral majesty;

But if our Christian faith tells no delusive tale, We in the glory-land shall bid our friend "All hail."

Will there be bees in heaven, and honey gathered there?

Is it a "happy hunting-ground," without a care?

We know not; but our friend will reap a rich reward Of joy and fellowship, "forever with the Lord."

Farewell, dear friend, and in a brighter world than this

May we enjoy with you a life of perfect bliss, Where thrilling music through celestial mansions rings,

And pleasures evermore are gathered without sting!

WM. F. CLARKE.

Guelph, Ontario, Nov. 18.

[This memorial would be incomplete without at least a mere reference to the life and work of one who was cotemporary with Father Langstroth, and gave him material aid and encouragement in his early labors. I refer to the founder of the *American Bee Journal*, the lamented Samuel Wagner — that prince of bee-journal editors, scholar, and bee-keeper. The early volumes of the "Old Reliable" under the editorial management of this man are a veritable storehouse of valuable information. As one glances over them he begins to wonder if we are so very far in advance of them to-day in our knowledge and practice. The fact that apiculture took such a wonderful impetus in this country in the early sixties is due very largely to the unremitting and unselfish labors of these two men. The one gave us the invention which revolutionized modern bee-keeping, and the other spread the knowledge of that invention over the whole wide world. Wagner saw at a glance the value of the movable frame; and during the darkest hours, amidst the persecution against Mr. L.—a species of blackmail that has been characterized as a blot and a disgrace upon our early apicultural history—this man Wagner stood by him through it all.

In the old *American Bee Journal* for March 12, 1872, we find this beautifully written tribute to the memory of Wagner, by Father Langstroth himself.—ED.]

DEATH OF SAMUEL WAGNER.

READERS OF THE BEE JOURNAL:—Your dear old friend, the honored editor of the *American Bee Journal*, is dead. On Saturday, February 7th, he awoke early, partially dressed himself, and was talking pleasantly with his wife, when he was suddenly seized with shortness of breath, soon became unconscious, and in less than fifteen minutes breathed his last. The physicians pronounced his disease to be aneurism of the heart. He had complained for more than a year of pain and numbness, interfering greatly at times with the use of his pen.

A noble, unselfish, good man has fallen, in the full vigor of his intellect, with judgment unimpaired, and memory wonderfully tenacious. Nearly seven-

ty-four years old! How few of the readers of the *Journal* could have imagined that its vigorous editorials and wise management were the products of a man who had reached an age when most men are comparatively useless.

If he could have chosen for himself, it would have been to die thus with the harness on; to pass by the shortest transition from useful happy work to the better land.

Few know how much Mr. Samuel Wagner has done for the promotion of bee culture in America. Being able to read German fluently*—indeed, until he was nearly ten years old he spoke no English—he had taken all the numbers of the *Bienenzeitung* and other German bee-journals, from their origin. His library is unquestionably the choicest repository, in America, of German bee literature, and probably the fullest, in this department, of any private library in the world. Better acquainted with the history and literature of bee culture than any man in America, perhaps than any living man—seldom if ever forgetting a single fact once lodged in his extraordinary memory, he was so modest† and reserved that only those who knew him well understood the wide range of his reading and investigation.

Unselfish to an unusual degree, he cared comparatively little for money or applause, but kept steadily in view the advancement of the true interests of bee culture, making his varied information contribute to the wider diffusion of all that pertained to the true theory and practice of his favorite pursuit. While specially familiar with every thing pertaining to this subject, he was well versed in the civil history of his country, and intimately with the ecclesiastical history of the German Reformed Church, in which he had served for many years as an honored elder. There were few subjects, indeed, on which he could not converse with ease; and by the extent, variety, and remarkable accuracy of his information, he was one of the most delightful companions to all who enjoyed the pleasure of his acquaintance.

It is very difficult to realize that all these stores of instructive and entertaining knowledge lie buried in his tomb; and nothing but a firm belief in the wisdom and goodness of that merciful Father, in whom he trusted, can reconcile us to his loss. He who hath brought "life and immortality to light in the gospel" knows best when and how to summon his children to their unclouded splendor.

L. L. LANGSTROTH.

[After the above the following appears, written by Mr. Wagner's son:]

☞ Samuel Wagner was born at York, Pennsylvania, August 17th, 1798. His father was at that time pastor of the German Reformed Church in that borough. Having accepted a call from the German Reformed congregation at Frederick, Maryland, he removed there. Mr. Wagner there attended the parochial school attached to the church. In 1810 his father resigned, owing to ill health, and re-

* We forgot, in the February number of the *American Bee Journal*, to give the proper credit to Mr. Wagner for his translations from the *Bienenzeitung*, given in the article on the Berlepsch frames.

† It is with deep regret that we announce that no likeness exists of our venerable friend. He shrank so instinctively from every thing having the least appearance of personal display, that he could never be prevailed on to allow his portrait to be taken.

turned to York, where he shortly after died. Mr. Wagner was then sent to the York County Academy, where he received his education. After leaving the academy, he engaged for some years in mercantile pursuits. In 1824 he purchased the *York Recorder*. In 1829 he sold the *York Recorder* to Mr.

C. Hamley, and removed to Lancaster, where, in 1830, he established the Lancaster *Examiner*. Receiving the offer of the cashiership of the York Bank, he sold the *Examiner* to Hammersley & Richards, and returned to York, holding the position of cashier till April, 1862. In 1863 he accepted the position of disbursing officer of the Senate. Resigning this position in 1868, he, for the few remaining years of his life, devoted all his energies to the editing and management of the *American Bee Journal*, which was to him a labor of love.

RAMBLE 145.

By Rambler.

If we could get them all together, there would be quite a congress of lady bee keepers in the United States. Some of these ladies are already known through the journals, but the greater share of them shun publicity, and are working quietly over their apiaries; and the results of their labors are known only in their immediate neighborhood.

One of these quiet, effective workers is Mrs. W. E. Clark, of Bloomington, Cal. Mr. and Mrs. Clark have been mentioned from time to time in Rambles; and what I have to say about them this time is in relation to the present season's yield of honey and its source.

I happened along with my camera at a very opportune moment, and the photo I present represents a condition that can be observed with varying phases upon the outskirts of all Southern California apiaries that are worked for extracted honey.

From the little extracting-house, and the tank outside, the honey is drawn into the 60-lb. tin cans; and as soon as cased it is ready for market.

Mrs. Clark manages the apiary from early spring until the honey is ready to case. Then Mr. Clark is called upon to exercise his lifting talent. At other times masculine humanity is not tolerated in the apiary.

From 80 colonies, spring count, which have been increased to about 120, Mrs. Clark extracted a carload, or nearly 12 tons, gross weight. It is needless to say that there is not much recreation indulged in during the honey-flow: but just as soon as the extracting season is over, Mrs. C. spends a few weeks at the seashore, and recuperates from the summer's labor.

So to Mrs. Clark in particular, and the lady bee-keepers in general, I will doff my hat and utter the following toast:

To chase the clouds of life's tempestuous hours:
To strew its short but weary way with flowers,
New hopes to raise, new feelings to impart,

And pour celestial balsam on the heart,
For this to man was lovely woman given—
The last, best work, the noblest gift of heaven.

The honey secured around this little range of hills is in quality amber and light amber. Water-white honey in California is produced exclusively from the sages: light amber is a mixture, for the greater part, of the sage honey with the darker or amber from other plants. Later on, when the sage bloom is passed, then nearly all of the honey is amber. By this admixture we get several grades of honey: but for marketing, it will all come under the three grades mentioned above.

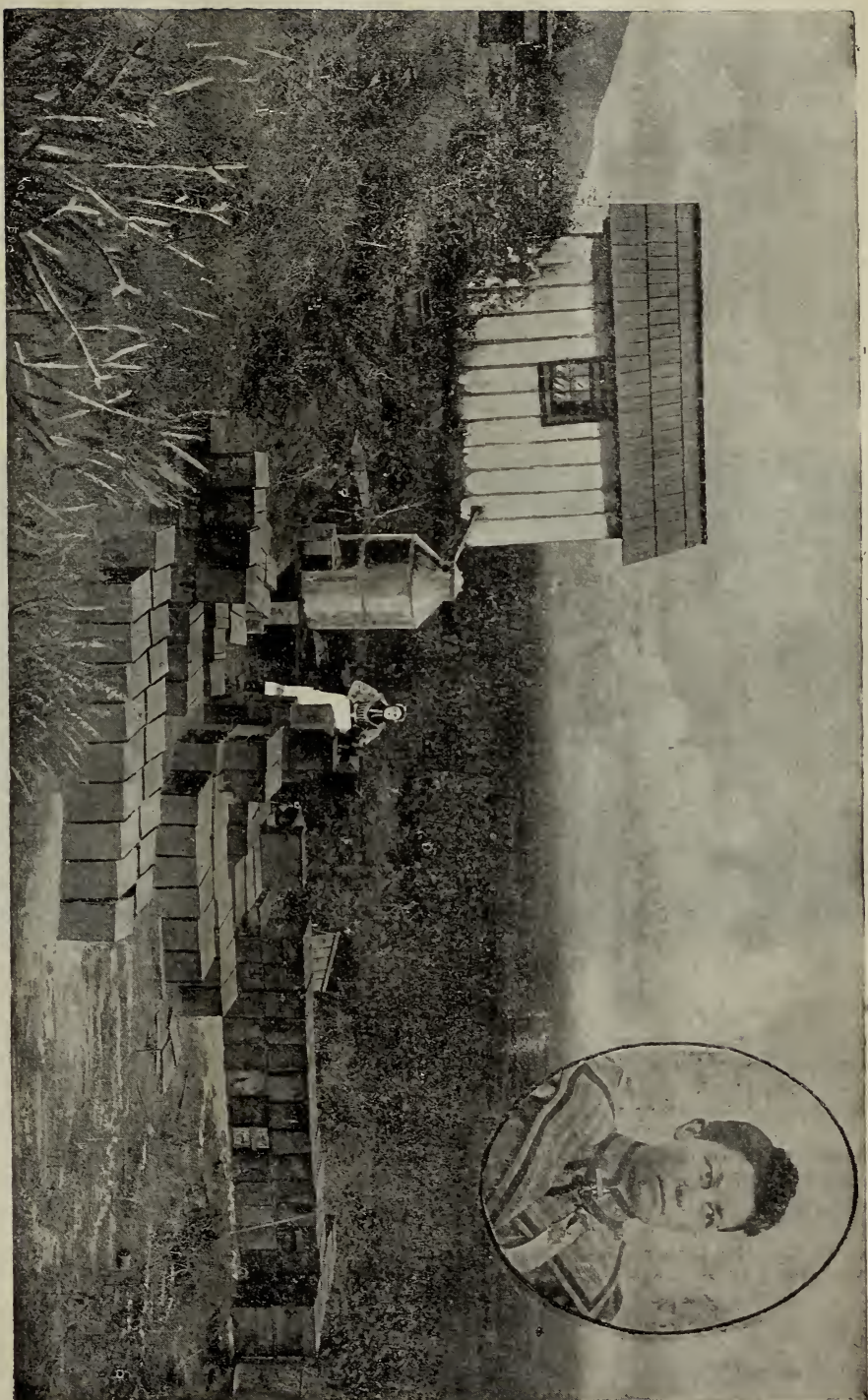
The sages have been so thoroughly written up and illustrated in bee literature that the reader outside the sage districts might readily imbibe the idea that the sages are the only honey-producing plants in California.



CALIFORNIA WILD BUCKWHEAT—HEADS OF BLOSSOMS.

While the sages do produce a large amount of beautiful honey, there is as great (if not greater) a honey-plant that has received but scant attention and no praise whatever; and I find that it is not even mentioned in any of our standard books upon bee culture. Desiring to do justice to a meritorious plant, and place it beside its more distinguished rivals in its true light, I present the photo of *Erigonum fasciculatum*, or California wild buckwheat.

This shrub belongs to the buckwheat family,



MRS. W. E. CLARK, AND CARLOAD OF HONEY.

and grows profusely upon all wild land in Southern California, with the exception of a few localities. It seems to thrive equally well upon the mountain-side and in the valley; and the nearer we get toward the Mexican line, the larger the growth. When in full bloom it is one mass of flower-heads, each head a tangled compact mass of little pinkish-white flowerets resembling the blossoms of the cultivated buckwheat. The flower-heads are a study in themselves, taking the various fantastic shapes of wreaths, rosettes, shields, etc. It does not burden the air with such a strong odor as the ordinary buckwheat, and would be scarcely detected by the scent.

The bees work industriously upon these blossoms; and from this source come the great yields of amber honey. It is not only profuse in bloom, but it holds its blossoms and honey

and give a fair yield of honey. It is a common remark here, with our older bee-keepers, that a range in which we find the sages, wild alfalfa, and wild buckwheat, can nearly always be depended upon for something of a honey-yield; and it is a bad season indeed when the buckwheat refuses its drops of nectar. There are, perhaps, many localities where the plant is sparingly distributed, or wanting altogether; but the same must be said of the sages and other plants. I conclude, however, that the wild buckwheat is more evenly distributed, and covers a greater area, than any other plant, and is the greatest and most reliable honey-plant in Southern California; and if there are any dissenting or consenting views among my California brethren in relation to this statement, I trust they will let them be known.



CALIFORNIA WILD BUCKWHEAT (*ERIGONUM FASCICULATUM*.)

production longer than any other plant in California. From early in June until into August it has this year made the hive overflow with sweetness and the bee-keeper sing pæans of joy.

Ordinarily this plant fails to secrete nectar from the 1st to the middle of July; but after a wet winter, and after late rains, it yields honey in a prolonged ratio. In places where there is much natural moisture it seems to bloom indefinitely; and I have no doubt that, if a field of it could be put under irrigation, it would yield honey several months. The honey is not so dark, and the flavor not so rank, as that from common buckwheat. The flavor is mild, and many people prefer it to the white honey, which, in many instances, has but little flavor.

Bee-keepers cite many instances where the sages have failed to secrete honey; then a little later the buckwheat would come to their rescue

In relation to the sages, I note in *GLEANINGS*, page 770, Mr. Israel entertains the same opinion that I did of white sage until I saw the bees doing such good business upon it. In the locality I referred to, the bees worked the black sage first; then there were two weeks of uninterrupted flow from the abundant white sage, before the buckwheat came into working order. The bees would flit up the long stalks of white sage from flower to flower, like climbing the golden stairs. The result is some of the most beautiful honey Mr. Israel could wish to examine.

A word to the reader: In studying the figures at the head of this Ramble, the reader will notice that it enumerates 145; this divided by 24, the number of issues per year, results in six years and one issue over. For six years, then, I have been a regular contributor to its columns.

In a recent letter to the editor I suggested that the readers would probably be pleased with a change or a stoppage altogether of Rambles, and allow the space to be filled with articles from new writers who are coming to the front.

Then, again, it looks as though my travels would not be so extensive as they have been. I have a growing apiary which will hold me down a good share of the year. So, with a few more scratches of the pen, perhaps the long-suffering readers would feel a relief to find the farewell scratch.

THE PRESENT STATE OF THE ART OF WINTERING.

THE SYMPOSIUM IN OUR ISSUE FOR NOVEMBER
15TH REVIEWED AND COMMENTED UPON

By Dr. C. C. Miller.

[It will be remembered that Dr. Miller was to review and bring out the salient points in the discussion from some of our prominent and successful bee-keepers as recently given, and present them in a new light before our readers. This he has done, and the subject is now so well digested that it will be easily assimilated by all, I trust.—Ed.]

At the close of the symposium on wintering, occupying ten pages of GLEANINGS for Nov. 15, the editor begins his remarks by saying, "It is encouraging. . . ." Without quoting his remark any further, I think those three words may be applied to the whole of the symposium. Careful examination of the articles shows less conflict of opinion than formerly prevailed. Some emphasize one point, some another; but where a man is silent on any given point it is probably because on that point he is in accord with the majority.

It's very cool of you, Mr. Editor, to give a comprehensive *resume* of the series, then say you want me to give the solid meat. Figures of speech aside, all I can do is to look the ground over and see what there is to talk about. To this end I have taken a piece of paper two feet square, written thereon a number of the points mentioned, then put down under each heading the views of the different writers. The remarkable thing about it is to find, as already intimated, so little clashing between them.

FURTHER DISCUSSION.

Let me begin at the very last end, the last line of the editorial comments, "the subject will be open for further discussion if thought necessary." I sincerely hope it will be thought necessary. Wintering has been so thoroughly discussed in the past that it needed a rest. It's had the rest, and may come up again with some degree of freshness. Its very great importance for all living north of a certain degree of latitude makes it worth while to discuss even very small points.

Now, making a big jump back to the beginning, there is found a change of opinion that has been silently but surely taking place as to the time of *beginning* to get ready for winter. Some place the date at about the middle of September, while others say at the time of taking off surplus-arrangements. Very likely the two agree, and those who say the middle of September are in the habit of taking off supers at that time. With others, who have no fall flow, the date may be in August.

AMOUNT OF STORES.

Besides having winter stores in place early, emphasis is put upon the matter of having not only enough, but an abundance of stores—not only stores to last through the winter, but to last through the critical time from the first flight in spring till the main harvest begins. Here, however, there is some conflict of opinion. B. Taylor is convinced "that bees winter better with just enough always accessible honey in their hives to feed them safely until warm weather." Whether his belief is correct

or not, I feel pretty sure that in practice he gives his bees more than he thinks they will use before warm weather, if by "warm weather" he means the time of taking out of cellar; for there is a difference of several pounds in the amount different colonies use; and as he doesn't know beforehand which will be the heavy consumers, he must in his winter preparations consider all heavy consumers. If he gives all enough so that he feels *sure* they will have enough until first spring flight, some of them will have enough to carry them through until the harvest. Whether it is best to have such an abundance in the hive that no colony will need any looking after until the main harvest, is one of the things that may well belong to that "further discussion." Whether my own theory agrees with his or not, my practice agrees at least so far that it is with me a very comfortable thing to know that I have some extra combs of honey ready to be given to any colony that may ask for it before the harvest.

As to the manner of ascertaining the amount of stores, not much is said—the little that is said inclining to the opinion that the colonies are weighed "with the eyes," as J. E. Crane expresses it—that is, by looking in the hive at the frames. Considering the uncertainty of this, unless every frame is carefully inspected, and that even then it's a hard matter to come within several pounds of the exact weight, I can not help thinking that most would prefer to weigh their hives if they knew how easy a thing it is. With a spring balance properly rigged you can weigh the hives with less time and labor than you can take out and inspect the frames. And then there's a comfortable feeling in the thought that you *know*, and that there's no guess about it. True, you'll not know to a certainty just how much honey there is in the hive, but you will know for a certainty the total weight, and from that you can make a safer guess as to the amount of stores than in any other way.

KIND OF STORES FOR WINTER.

As to character of stores, I think no one says sugar is bad; and when feeding must be done in any other way than by giving filled combs, sugar comes first. Of course, sugar or any thing else may be fed so as to do mischief; as, for example, if a very thin syrup be fed very late. C. A. Hatch puts down wild-bergamot honey as "the very best stores," but not many have that. He admits, however, that "sugar stores are all right for winter if fed early, and good sugar is used." But who in this country can tell any thing about what is *good* sugar? In foreign bee-journals, sugar of the right kind for bee-food is constantly advertised; but there is a lack of enterprise, intelligence, or something, among furnishers of supplies in this country. Although B. Taylor thinks honey-dew sometimes good for winter stores, it is no doubt a safe food to leave out of a hive, or to replace with sugar.

BEST AGE OF BEES FOR WINTERING.

The former divergence of opinion as to the best age of bees to winter well seems to exist no longer, young bees being preferred. The younger the better, only so they have had one flight before going into winter quarters. As tending toward this, H. R. Boardman recommends young queens, they laying later in the fall, with the additional advantage of commencing earlier in the spring. Sometimes, however, bees breed too early. B. Taylor, like the reckless youth he is, butts whack against orthodox teaching, by broadly hinting that bees live just as long when busy as when idle; and this in the face of his own statement that most of the bees in a hive May 1 must be seven months old, whereas he will hardly vary much from the general belief that a worker in the busy season lasts only about six weeks. Bro. Taylor, if you don't want to be gibbeted it will be in order for you to explain or recant. In any case, it looks entirely reasonable to believe that in winter there will be fewer deaths from old age among young bees than among old.

AMOUNT OF ROOM IN THE HIVE.

Much weight is given to the matter of having no more room in the hive than necessary, as against the strange teaching of a late writer in GLEANINGS, who claimed that bees were warmer in a large than in a small hive. The generally received opinion is that small colonies consume more in proportion to their size than large ones—an opinion that is perhaps tenable, as suggested by J. E. Crane, only when large and small have the same amount of room. In this connection it may not be out of

place to suggest that, in addition to its other advantages, cramming the brood-nest with stores is practically making less room in it for the bees to keep warm. Whether in general a colony may be crowded on so small a number of combs as to be overwarm and restless, as Mr. Crane holds, may be one of the things that would bear "further discussion." "Further discussion" is also provoked by B. Taylor's insisting that bees should cluster "over their stores." It seems to me that his bees must have extra training to induce them to pack their stores below the cluster. Better wintering is secured in shallow hives by F. Greiner, and in hives after the Heddon pattern by J. A. Green. This might also awaken discussion.

SPACE UNDER BOTTOM-BARS.

I think there has been a growing feeling in favor of having extra space under the bottom-bars during winter. No one, to my knowledge, ever expressed a belief that it could do any harm, the only objection being the extra trouble. I am heartily with those who think the advantage more than pays for the trouble. Probably there can be nothing better for the bees than the plan of having no bottom-board or floor, and having the hives piled apart so as to have a great space under. I mean just so far as the air is concerned, although on other accounts I prefer the reversible floor-board, which is only a modification of the rim used by others. The reversible floor-board has the rim attached to it permanently, and is especially convenient for those who change their bees from one place to another; for when taken out of winter quarters it can be ready at a moment's notice to be hauled to the out-apiary. Then it's no small advantage to have hives mouse-proof during winter, as they can easily be by putting coarse wire cloth at the entrance of the reversible floor-board. With no floor-board the mice have full entrance to the hives; and although you think you have a mouse-proof cellar, too often you find in the spring that the mice have been playing havoc with your bees and combs. Mr. Pettit's plan of having an opening at the back as well as front gives air with less room if care be taken to have no clogging. Mr. Crane secures much the same advantage by having an extra entrance half way from top to bottom.

SEALED COVERS.

Some time ago sealed covers seemed deserted by their warmest advocates, leaving that apparently as one of the settled questions. But at least one man stoutly stands his ground amid the general stampede, and says sealed covers are all right. Is it worth while to allow the question a place in the realm of "further discussion," just to convince one stubborn man? Hardly, when it's a matter of mere opinion. But when J. A. Green continues to use sealed covers, and uses them *successfully*, and year after year, that single fact, just because it is a fact, leaves the question still unsettled. If he succeeds where others fail, what makes the difference? I think it is perhaps the general opinion nowadays, that in the cellar, sealed covers are all right. What makes the difference between success and failure outdoors? Is it possible that it may be in the packing over the covers? Mr. Green has 6 or 8 inches of packing over, that packing having a rain-proof cover. Have others who have failed used the same packing?

WINTER PACKING.

For outdoor wintering, packing was never more popular than at the present time, and yet I'm not certain that there are not those outside of this symposium who prefer single-wall hives unpacked for the sake of having the advantage of the sun on the single walls in winter. Possibly the matter of latitude may have something to do with this. The editor is right in remarking that "all are agreed that outdoor colonies should be packed in double-walled hives," if in that class of hives he includes single-walled hives with a winter packing around them. Top packing seems to be considered of more importance than at the sides; and where any difference is made there is more packing on top. Pleasant to know that there's such general agreement in preferring planer-savings for packing-material.

TIME TO CELLAR BEES. □

□ The date for carrying bees into the cellar is set by one at Nov. 1; by another at Nov. 15, and by two others at Nov. 20. I feel pretty sure that, if they had taken room to explain more fully, neither one of them would have said he adhered strictly to the

given date. I suspect they are very much like myself. If I were obliged to name positively at the present time the date at which my bees should be carried in next winter, perhaps I should say Nov. 1. But in actual practice the almanac has little to do with it. One year they will be better off to stay out till December, while I have known a year in which every day that the bees stayed out after October was a damage to them. It's a matter of guess at best. Aim to cellar them immediately after the last fly they'll have before December, remembering that one day too late may be worse than five days too early. That is, it won't do as much harm to have them confined unnecessarily in the cellar five days, as it will to be taken in one day after a flight if that one day is pretty cold. As Mr. Boardman suggests, it makes a big difference when they're taken in as to the matter of quietness. After they have had a fly, the first time the thermometer touches 45° you'll find them pretty quiet.

DARKNESS IN CELLARS.

The editor says the underground room for bees should be darkened; but Mr. Boardman gives his bees the full light of day after they are in the cellar, until the weather becomes quite cold. No one, probably, would want his cellar to be light all the winter long; but some think it advantageous to have the cellar light part of the time. I think this view is gaining ground. The late Jesse Oatman told me that a leading bee-journal not far from the State of Ohio once refused to publish an article saying that at times light could be safely let into a cellar, such a view being thought too dangerous heresy to get into print. [It was not refused for heresy, certainly; but if it did not get into GLEANINGS it was probably overlooked in some way, owing to the large lot of unused manuscripts.—Ed.] I believe the admission of light is a benefit, whenever it can be admitted without stirring up the bees. Like Mr. Boardman, I allow my cellar to stand open until the thermometer inside runs below 40°. Toward spring, when a warm spell comes, making the bees uneasy, doors and windows are opened wide in the evening. That raises a general row in the cellar; the bees run all over the hives, and roar enough to frighten a novice. By morning, however, all are quiet, and I've seen the direct rays of the sun shining right into the entrance of a hive without seeming to disturb them in the least. Sometimes they'll remain quiet all day with the cellar light, and sometimes they'll begin to fly out soon after sunrise. As soon as they show uneasiness I close out the light.

TEMPERATURE AND MOISTURE.

Entire agreement as to temperature has not yet been reached. Possibly there might be unanimity as to temperature if all cellars had the same degree of moisture. For a considerable time 45° has been a kind of standard figure, and the symposium still holds somewhere near that for the average cellar. Elwood gets it down pretty fine by saying 38 to 42° for a very dry cellar, 45 to 50° for a very damp one, and 42 to 45° for one of average moisture. But Pettit wants a damp cellar kept down to 40°, giving as one reason that the bees will thus be kept drier; for as air is heated it will take up more moisture. I'm afraid all will not admit the correctness of that philosophy, and I suspect others would want a moist cellar to be kept warmer. Boardman wants the cellar about ten degrees warmer at the last end than through the principal part of the winter, and I suppose most agree in thinking it well to have a higher temperature toward spring—at least, after brood-rearing begins.

VENTILATION.

None of the writers ignore ventilation, and perhaps no one nowadays would insist that bees will pass the winter hermetically sealed. So there's progress in that direction. Enthusiasm for sub-ventilation has faded. For one, I should be just as enthusiastic as ever if it were not for the fear that Mr. Pettit may be right in thinking that a gain in temperature is accompanied by a gain in moisture; and, worse than that, I'm a little afraid noxious gases may be taken up in passing through the earth. If provision be made to carry out the air of the cellar, I'm not much afraid about its getting in. And perhaps it's as well to have it come in at a thousand little cracks and through a million pores as to have it come in all at one spot labeled "Entrance."

As to ventilation of hives themselves, there has

been a gravitation toward ventilation at the bottom, and larger entrances than formerly. I suspect convenience has much to do with the matter. I have some doubt whether it matters in a cellar whether the bottom be all open with the top sealed tight, or the top all open with the bottom sealed tight, or whether both top and bottom be open with the air passing through. Only in the latter case there must be so small a passage either at bottom or top that the air will not pass through faster than the bees can use it. In my first cellaring, hives were entirely open at top, and sealed tight at bottom. That is, they were box hives turned upside down. That was Quinby's plan, and it was the most convenient with box hives. With the present hives it's more convenient to have the opening all at the bottom. If the opening is both at top and bottom, it's difficult to adjust it to the wants of the bees. Of course it would be impracticable to have hives all open at the top; but at present the majority think it easier to secure right ventilation by having the top slightly open in addition to the opening at the bottom.

BEHAVIOR OF BEES IN WINTER.

I suspect that at least part of the battles that formerly raged over the matter of hibernation arose from the fact that all did not agree upon the meaning of the word. Very few, if any, will now contend that a bee hibernates as do other animals to which the term is applied. If any one should yet think that a colony goes through an entire winter in a dormant condition, a short time spent in a bee-cellar will disabuse his mind. Whether the guess given in the symposium, that there is a waking-up once a week, is correct, I do not know. I suspect that 24 hours might come nearer the truth. Mr. Pettit takes the ultra ground that not the slightest noise of humming should be heard in perfect wintering. I don't know about that. I do know that I have had bees winter in such condition as I think would satisfy almost any one, and yet I never went into the cellar without hearing what is often called a "contented hum." And yet I must confess that, by looking into a single hive, I could generally see no movement.

FIRE IN CELLARS.

Two in the symposium keep fire in the cellar. I suspect that's a larger proportion than will be found generally among those who cellar their bees. Of those who have tried it and abandoned it, it might not be out of place to inquire whether there may not have been a wrong use of a right thing. Mr. Boardman says it grows in favor with him. I'm not sure whether it does with me, but I'm sure the conviction grows that it is all right. If a cellar stands too near the freezing-point, you can bring the temperature up by making the cellar closer; but you'll have better ventilation and air by bringing up the temperature with a fire. We make fire for folks in winter, and no harm comes of it. Why not for the bees? The fire is put in an adjoining room, not in the same room with the bees. Just why, I don't know. Perhaps the fire is made with wood, in which case there might be too sudden a change of temperature, and the light from the burning wood might be mischievous. For my own use I would no more think of putting the fire in an adjoining room than I would a stove for heating a sitting-room. But I use anthracite coal altogether. A small cylinder stove keeps a steady low fire, and the door of the stove is left wide open all the time. That helps ventilation. I think some fear that bees would fly into the open door, but I never knew a single bee to do so. The fire is kept going day and night all winter long, unless a spell of weather comes that makes the cellar too warm. I may mention that those colonies that stand nearest the stove winter as well as any.

TAKING BEES OUT OF THE CELLAR.

The time mentioned for taking bees out of the cellar is about April 1. Here might be made the same remark that was made about putting bees in. It's a matter of weather rather than one of date. For some years I went by the blooming of soft maple. But that sometimes fooled me, for a cold spell came after they were in bloom, making me wish I had left the bees in the cellar. So now, when the maples bloom, I wait till it seems so warm and pleasant there isn't much chance of more winter weather. That may be when the first maple-blooms show, or it may be two weeks later. And the maples don't watch the almanac closely.

Greiner takes his bees out at night. I prefer Boardman's plan of taking them out on a warm day so they can fly at once. If they are taken out at night, the thermometer may sink before morning below the freezing-point, making each day they are longer confined in the hives worse than a week in the cellar.

Greiner says, "In placing them on their stands I pay no attention to their former location the fall previous." I think some of the bees will go back to their former locations, but I don't know that any harm will come of it. When they first come out of the cellar they seem to be of one scent—at any rate they unite peaceably, and Boardman takes advantage of this to unite at once any that need uniting.

FINALLY.

When I commenced this symposium I thought I could confine to less than a page what I had to say. But I didn't know. I haven't said near all I wanted to, and it's more than a page. You might, Mr. Editor, run it as a serial through the year 1896. Some people like continued stories.

Marengo, Ill., Nov. 25.

[Instead of continuing this in several issues, as hinted by the doctor, I thought we should get a better bird's-eye view to have it all in one issue, and use a smaller face of type. We can't get a bird's-eye view by looking at a spot here and there in the different issues of GLEANINGS. The subject is now open for further discussion. —Ed.]

TENEMENT WINTER CASES.

HOW AN EXTENSIVE BEE-KEEPER OF YORK STATE PUTS UP HIS BEES.

By W. L. Coggsall.

My bees are from 3 to 16 miles from home, and are packed in winter cases with dry sawdust that I keep from year to year. The size of packing-case is 6 ft. long, 2 ft. wide, 2 ft. high on back, and 2 ft. 6 in. on front, and is made of matched pine. Such a box will hold eight 8-frame Langstroth hives, by piling them two tiers high. Slots are cut in the high side, just opposite and corresponding with the entrance in the hive, and a block nailed on so the bees have an alighting-board. When preparing to pack I move four hives out of their position in the row, and then put the case in their place. I now put the four colonies into the case, and shove them tight to the front (my hives do not have porticoes), so the entrances correspond with the slot in box. I take off the enamel cloth and put on brussels carpet, or ingrain; then throw on the sawdust, and pack well between each hive, leaving $\frac{1}{2}$ in. of sawdust on top of the carpet, after which I put on four boards just the size of the bottom of the hive. I now set in four more colonies, and apply carpets and the sawdust. Over the whole I put a water-tight roof. I used shingles at first, but now prefer sheet iron, painted.

After the apiary is a packed I go around and put in strychnine, which is put in cookies prepared at home, to kill the mice. The winter case should be 10 in. from the ground, and I usually raise them up in October. I usually go around once in the winter and clean out the entrances, and put in more poison, and then in the spring, and take out those that are dead,

which is not more than 2 to 8 per cent; then I go and unpack them just as apple-bloom ceases; then they are all full of brood.

Old brussels carpet can be bought of rag-gatherers for 2 to 4 cts. a pound. They will last a long time—5 years if they are put on the bees the same side down that is used on the floor.

Two men can put up for winter 100 to 125 a day, and go eight or ten miles, and can unpack them faster.

West Groton, N. Y., Nov. 15.

[This was written in response to our request for an article for our symposium on wintering that appeared in our Nov. 15th number. As it came too late for that number, we give it here. —ED.]

THE WINTERING PROBLEM.

AN IMPORTANT SUGGESTION; A UNIFORM TEMPERATURE IN THE CELLAR NOT DESIRABLE.

By R. McKnight.

Of all the problems bee-keepers are engaged in solving in this northern climate, the above is the most important; because successful wintering means a measurably satisfactory honey-harvest. I am not going beyond the bounds of truth when I say the solution of this all-important problem has engaged my own serious attention. I have been so situated that its consideration forced itself upon me.

During the last 15 years I have cared for from 2 to 250 stocks annually. About half of these were kept in my home apiary, where I have a good bee-house especially constructed with a view to successful wintering; and the other half in a yard about 15 miles from home, where there is no suitable cellar or bee-house, and the bees must be wintered outdoors. This has given me an extensive experience in the relative merits of the two systems of wintering.

It is not my intention to here discuss the advantage of the one method as compared with the other, nor to minutely detail the best course to follow in either case; but, rather, let me outline what is necessary to successful wintering under any circumstances. This includes stores, ventilation, and packing (the last is important only in outdoor wintering).

The first essential to successful wintering is plenty of bees, with ample stores against the time of need, which, with me, lasts from October till June. This consists of sealed honey or sugar syrup.

There are other minor matters which need attention, and which will commend themselves to the experienced bee-keeper, but which demand too much space to be here dwelt upon.

VENTILATION.

What type has been employed in printing the opinions of people on this element in the successful wintering of bees! and yet how little we know about it! I was especially impressed by this fact on reading what Mr. Elwood wrote

on page 815 of GLEANINGS. The theory he there broached has awakened in me thoughts I never before entertained on the subject, and may, if true, account for the alleged fact that bees wintered outside are less liable to spring dwindling than those kept in a cellar or bee-house. What is the true theory? It is, as I understand it, that bees, when wintered indoors, should be surrounded by atmospheric conditions, and kept at a temperature sufficiently low to throw them into a state of hibernation, in which the functions of life are partially suspended; that they should be aroused from this state of torpor at regular and necessary intervals; that they may partake of sufficient food to keep them strong and healthy; that they may be aroused to the desired degree of activity by raising the temperature of the repository in which they are kept; that, after having satisfied the demands of nature, they should be returned to a state of quietude and lethargy by again lowering the temperature; and that this should be repeated, when necessary, during the period of confinement; that, being thus kept quiet, and fed when required, they will be put out in the spring well nourished, having strength and vitality calculated to successfully carry them through the trials of spring.

How often these periodical revivals should be brought about, and how long they should continue, remains to be determined by experiment. Mr. Elwood quotes the opinion of the late Mr. Quinby, that "an occasional fire in the cellar is useful." It seems to me this opinion is along the lines of the above theory. We all know bees wintered outdoors consume more stores than those kept inside. May not the cause of this be that, in the latter case, they are subjected to more frequent and more violent changes of temperature, and, in consequence, afforded more opportunities to feed, which may account for their alleged ability to survive the springtime.

If this theory be found to be correct, it will change our present practice materially. The orthodox belief of a "uniform temperature of from 42 to 45°" must give place to a new faith; namely, that *uniformity* of temperature, instead of being necessary to safe wintering, is one of the prime causes of bees being put out in the spring in a weak and debilitated condition, ill fitted to enable them to pull through till bloom time. I may have misinterpreted Mr. Elwood's position; any way, what he has written has afforded me new food for thought on the wintering problem.

MATERIAL FOR PACKING.

This may embrace whatever is used to fill up the space between the outer case and the hive it incloses, as well as the materials employed to fill the cushions placed over the brood-chamber. Any of the materials commonly us-

ed for packing are good enough so long as they are dry when put in, and kept dry while it is in; but there is a great difference in the value of the various materials that are used for filling the cushions. The best of these is carded wool; next in order of value is cork dust. Chaff should not be used. What is needed is something that will transmit the moisture—not absorb it. Dry sawdust, such as is made by ripping up dry lumber in a factory, will serve the purpose. I have tried all these, and I found chaff cushions come off the hives in the spring matted and mildewed, and those filled with wool or cork dust come off as light and dry as the day they were put on.

Owen Sound, Ont.

AMONG THE BEE-KEEPERS OF WISCONSIN.

By Harry Lathrop.



On the 12th of September I started on a trip through the basswood region of Southern Wisconsin. A short account of what I saw and heard may be of interest to the readers of GLEANINGS.

Going first to Wauzeka, Wis., situated on the Wisconsin River, I there took the Kickapoo Valley R. R., which runs up the river 35 miles to a village called Soldiers' Grove, passing through Crawford Co. The valley is narrow in most places, with high bluffs on each side, and one can not see what is beyond these ridges as he

rides along. The bluffs abound in basswoods, while the river-bottom is a tangle of fall flowers. I met only one bee-keeper on the way up. I talked with him a few moments while the train stopped at a small station. He did not appear to be a very advanced bee-keeper, and said he did not take a bee-paper. I asked him if he would take GLEANINGS.

"No," said he, "I don't like it."

I asked him why he did not like it, and he replied, "There is too much Christ in it."

How impossible it is to please everybody! But I trust that this brother will soon change his mind, and learn that GLEANINGS is his friend, not only because it will help him to do better with his bees, but because it *has* Christ in it.

From Soldiers' Grove I took the stage to Viola, 15 miles further up the river. From this point the country becomes more beautiful. The hills remind one of the highlands of the Hudson below West Point, N. Y. There is a great

abundance of thrifty basswoods; and the hillsides, being very steep, there will always be much of it that will be left standing.

The stage-driver, I ascertained, was also a bee-keeper. He had about 20 colonies; did not take a bee-paper; said he knew enough about bees to carry him through. I thought I would test him a little, and the following conversation took place:

"Mr. R., did you ever have any experience with foul brood?"

He hesitated a moment, and replied:

"Yes, I had one case last year."

"What do you consider the best way of treating it?"

"I guess the best thing to do is to burn them up. I burned one last year."

I agreed with him that his treatment was all right for foul brood, and he went on to say that he rather thought he had a case of it in his yard at that time, but had been too busy to attend to it; "and," said he, "I have seen cases of it so bad that *they would lay a dozen eggs in one cell.*"

At this point I opened my eyes a little wider, but concluded to say no more on the subject.

In the vicinity of Viola there are several beekeepers who number their colonies by the hundred, and usually produce good crops of honey.

From Viola I went westward in Vernon Co. to a point near Viroqua. Here I visited Mr. W. M. Cox, who in times gone by has produced some fine crops of honey. The poor seasons of late have somewhat dampened his ardor, and very much reduced his stock. But he intends to build up again, and try to do better. He has taken GLEANINGS for many years, and, unlike the other man referred to above, he likes it *because* it has so much of Christ in it, and says it has been a great help to him in his Christian life.

Returning to Viola, my friend and brother John Willan, who is an evangelist in these parts, took me with his pony team 15 miles further up the river to a place called Rockton. We saw many good locations for bee-keeping; great quantities of basswood in the hills, and very few bees kept. Some of the names in this valley would bring a smile to the face of a judge. At one place John pointed to a small valley entering from the east. "That," said he, "is Goose Creek. A man of the name of Gander used to preach there. On the hill to the north lives a family of Drakes, and a short distance in the other direction is a family of Goslins."

How is that for a web-footed community?

On returning to Viola I visited the home and apiary of Mr. Andrew McCarty, the successor of M. A. Gill, well known to the readers of GLEANINGS. Mr. McCarty has a beautiful home, a good wife, and 200 colonies of bees, 100 of which are in the home apiary, and the rest at a place several miles down the river. He uses the S-frame Langstroth hive, and works exclusively

for extracted honey, as do nearly all other bee-keepers in this region, extracted honey being much easier to transport to the railroad. Mr. McCarty is one of the very few bee-keepers who produced a crop of honey this year. He accomplished it by moving his bees to a place where the basswood-flowers were not killed by the severe frosts in May.

My next stop was at Yuba, on Pine River, in Richland Co. Here I visited Mr. E. C. Priest, the only bee-keeper in the immediate neighborhood. Mr. Priest had taken only a small crop of honey, and confessed that he had partly neglected his bees for several years back, as he has built and equipped an excelsior-mill, and worked hard to make it a success; but it has not paid. I remarked that he would have done better and had an easier time if he had increased his bee-business, and attended to it properly, and let the excelsior-mill alone, thereby also avoiding the destruction of the basswood timber. He assented that such was the truth. I find the tendency in this country is to neglect the bees for various kinds of ventures. Very few seem willing to make a specialty of honey production, for the reason, as they say, they are not sure of a crop of honey every year.

From Yuba I went down Pine River Valley, passing on the way one of the apiaries of the successful bee-keeper Mrs. Pickard. At Richland Center I was met by Bro. C. A. Hatch, who took me out to his beautiful home and farm. Mr. Hatch is too well known as a bee-keeper to need an introduction here. He and his brother, A. L. Hatch, are extensive fruit-growers. I was surprised to find them successfully producing a large variety of choice apples, plums, cherries, grapes, and small fruits. Of course, the crop was short this year on account of the unusual frosts. Their orchards are situated on the top of high clay ridges, entirely unsheltered. There are many such ridges in Southern Wisconsin, but there are no orchards on them. The apple-trees are usually placed along the creek bottoms, where they do not thrive. These orchards of the Hatch brothers are an object-lesson to the bee-keepers and others of our State, because they show what can be done in our climate; and if there is any branch of business that goes well with bee-keeping I think it is the production of the larger fruits which are gathered after the busy honey season is past. I shall never forget the beauty of these fruit-farms nor the kindness shown me by both the Hatch brothers during my short visit. When I started for home from here, C. A. took me to a small railroad station below Richland Center, and pointed out the place where the out-apiary of the late S. I. Freeborn had made large crops of honey from a kind of mint after the close of the basswood season; but the large number of colonies once owned by him is now greatly reduced. In fact,

the bee-keeping industry is somewhat neglected in these regions, and the amount of honey produced is but a small per cent of what is possible.

In closing I will say that I am not trying to beat Rambler out of his job, though I do enjoy traveling among the bee-keepers, and looking up the resources of my State. I am a married man, and love my home and family, therefore my rambles must be few and far between.

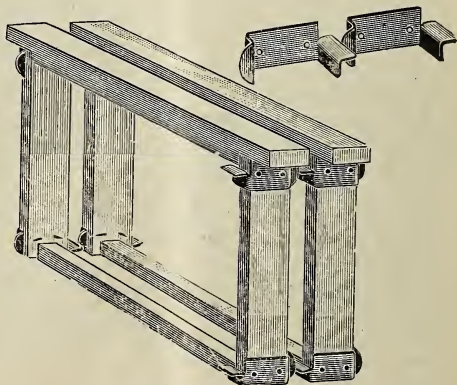
Browntown, Wis., Oct. 23.

THE STEPHENS SPACER.

IMPORTANCE OF GOOD LUMBER FOR TOP-BARS.
AN OPEN LETTER TO DR. MILLER.

By Geo. W. Stephens.

Dr. C. C. Miller:—I see you have dropped the discussion of hives, and taken up frames; and in your article on "The Right Kind of Frames," in GLEANINGS, October 15, you point out an objection to the Stephens spacer. Well, I suppose spacers ought to be discussed along with other things; they are a necessity to any one who is at all particular and cares to have straight combs, and to get rid of propolis. A fair discussion will not injure a meritorious article, and I believe in the survival of the fittest; but my mind is not clear as to whether you are putting up one of your jokes, or are in earnest; for, you see, the objection you raise applies to the top-bar and to the man who nailed the frames, and not to the spacer at all. On the same line of reasoning you might say the Stephens spacer will not prevent top-bars from warping. I have some top-bars, made by a popular manufacturer, that are warped, or sprung out of line, $\frac{1}{8}$ inch; but I never thought to blame the spacers. I think it is because they were made of poor lumber, or else it was not well seasoned.



STEPHENS' FRAME-SPACER.

Top-bars should be made of first-clear, well-seasoned lumber; and if pine will not do, something else should be used; and then they should be cut true and to an exact size, and great care

should be used in nailing the frames. I do not think there is any excuse for top-bars varying in width, although I may be mistaken. But if they are cut true to an accurate size, and all alike, I think—in fact, I am sure—your objection to the spacer will be overcome, and you would then secure both fixed distance from center to center and exact space between top-bars, and I believe one is about as essential as the other. The price of the spacers may seem high; but that will be governed by the demand somewhat. When they become better known, and there is more of a demand for them, I have no doubt they can be manufactured and sold at a lower price.

If the end-bar were widened to $1\frac{1}{8}$ inches, the same as the top-bar, as you suggest, I doubt very much whether you would find it any easier to nail the frames true; and if the Stephens spacer were to be used, the flanges (or wings) would have to be shortened $\frac{1}{8}$ inch all around, and the inside lengthened $\frac{1}{8}$ inch, in order to clasp the end-bar. The space between the shoulders of the spacers would then be less than $\frac{1}{8}$ inch, and the bees would fill it up with propolis—a thing certainly to be avoided when possible. If the end-bar were made narrower than one inch, the flanges of the spacer would have to be correspondingly lengthened, and would be liable to bend unless made of heavier material, which would add to the cost. So you see I settled on inch-wide end-bars advisedly.

I certainly feel flattered that you find no worse fault with the Stephens spacer, and name an objection that can be so easily remedied, notwithstanding the fault lies elsewhere; but if you were using them on your frames to any extent you would then know what a pleasure it is, comparatively, to handle frames in a nine-frame Dovetail hive, without that superfluous piece of furniture called by courtesy a follower.

Denison, Iowa, Oct. 28, 1895.

[Dr. Miller replies:]

In some respects I think the difference between us is one of words rather than ideas. I admit that, with frames that are made perfect in every respect, the Stephens spacer will not only space correctly from center to center, but will also leave top-bars apart at exact distances. I so stated on page 775. I said, "One of these will secure the other if all frames were made exactly true," meaning the spacing from center to center and the spacing between top-bars.

I can not agree with you that it is as important to have the right distance from center to center as it is to have the right distance between top-bars. A variation of $\frac{1}{8}$ inch of an inch in the distance between top-bars would be likely to make an appreciable difference as to the amount of brace-combs, while a variation of $\frac{1}{8}$ inch from center to center would hardly make an appreciable difference in any direction so long as the distance between top-bars is kept exact.

But what we have to do with in actual practice is frames that are *not* true in every respect. At least that's what I've always had to do with. I don't think I ever yet had as many as a hundred frames in one lot that would give exact distances between top-bars by applying Stephens spacers. I doubt whether I ever shall have, and I suspect that I have as true frames as the majority. In such cases, you may lay the blame where you like; the fact remains that the Stephens spacer will not make as good work in preserving an exact space between two top-bars as a nail driven in to the proper depth.

I doubt if any better wood than pine is likely to be used, and I think you are right in believing that the very best should be used, and not poor stuff for the sake of using up scraps of lumber.

You are probably right in settling on an end-bar 1 inch wide as best for the Stephens spacer. But the same reason that makes me want the small space between top-bars makes me want the small space between end-bars and bottom-bars, although the latter is not so important. So I want a spacer that will accommodate the frames rather than to have frames to accommodate the spacer. At the same time I must say that, with frames to suit them, I don't know that any thing better than the Stephens spacer is to be desired.

You are right in saying that, with frames exactly true, the Stephens spacer will secure both correct distance from center to center, and also between top-bars; but any other spacer will do the same with such frames.

The matter of price I did not take into consideration, and it is not my place to meddle with your business matters; but since you have mentioned it—rather the editor first mentioned it—it may not be out of place for me to question the policy you have adopted, that of putting on a patented article (and I believe in patents) a higher price to be paid by those who are first to see its merits and help to introduce it, and then a lower price to others. If I had confidence that an article would become standard, I think I would anticipate its popularity, and make it help advertise itself by selling the first at as low a price as I thought would rule after being well introduced—somewhat on the common principle of introduction prices, which is only one form of advertising. But, as I intimated before, that's none of my business, and you have a right to put what price you please on your own goods.

C. C. MILLER.

Marengo, Ill.

[I consider the Stephens a really good spacer. Perhaps in the line of metal devices it is the best. Although we illustrate it on page 418, May 15th issue for last year, yet for the convenience of our newer readers we reproduce the cut that then appeared.—ED.]

H. W. SCOTT.

PRESIDENT OF THE VERMONT STATE BEE-KEEPERS' ASSOCIATION.

By A. E. Manum.

Mr. Editor:—I dislike to do any thing on the "sly;" but sometimes if one can surprise a friend in a pleasing way it becomes gratifying to the performer to do so. Therefore it is with the greatest pleasure that I present the readers of GLEANINGS with a picture of the worthy president of the Vermont Bee-keepers' Association, Mr. Horatio William Scott, who was born at Barre, Washington Co., Vt., Aug. 10, 1870. In the spring of 1884 he removed with his parents on a farm in the town of Williamstown, Vt., where, in the fall of that year, he became the owner of two colonies of bees, although in the spring of 1885 he found himself the owner of only one colony, having lost 50 per cent in wintering. He soon procured Root's A B C and a Clark smoker. Armed with these two very useful and essential implements he studied and



H. W. SCOTT.

worked, and watched and waited, with the result that he secured 75 lbs. of honey, which netted him a profit of \$15.00. With this success the "bee-fever" got full possession of him; and before winter set in he purchased five more colonies, making six in all, which were successfully wintered.

The seasons of 1886 and 1887 proved to be poor ones for surplus honey; but a good increase of colonies was secured. At this point Mr. Scott concluded that it would be to his advantage to work with some experienced bee-keeper. He therefore secured a situation with the writer, with whom he served during the seasons of 1888 and '89. Mr. Scott, being a very apt and diligent student, soon mastered the "mysteries of bee-keeping" so far as they were revealed to his tutor.

I must say right here, in justice to the sub-

ject of this article, that, although I have had a great many students in the apiary, I never had one more diligent and trustworthy than was Mr. Scott. I always found him reliable and respectful in every respect and place.

In the season of 1890 Mr. Scott took charge of and managed the apiary of Mr. J. W. Smith, of Stowe, Vt., with perfect satisfaction to the owner. In the fall of 1890 he entered Goddard Seminary, from which he graduated in June, 1893, having completed a course of 117 weeks in 105 weeks.

On the 27th of January, 1892, he was elected secretary and treasurer of the Vermont Bee-keepers' Association, which office he held with honor and credit to himself and the association until he was elected, Jan. 18, 1895, its president, which office he still holds. He acted on the committee appointed by the association which secured recognition by the Vermont Experiment Station, and in the establishing of the department of apiculture, he having had an oversight of this department for two or three years. Mr. Scott having been a close student of bees and their habits, and an extensive reader of apicultural works, was thus fitted for this position, and for a place in the front ranks of apiculture.

At present Mr. Scott resides at Barre, Vt., where, two years ago, he entered the law office of Burney & Howe, where he began the study of law; and, if I mistake not, has since been admitted to the bar.

He is, or has been, justice of the peace for Washington Co.; a member of the I. O. O. F.; is also a part owner, and clerk and treasurer, of the Acme Granite Co., of Barre.

Although Mr. Scott is engaged in other business, both public and private, he is still interested in bees, and has an apiary of his own which he manages very successfully, keeping well up with the march of progress. Mr. Scott is well worthy of the confidence of all bee-keepers, at home and abroad.

Bristol, Vt., Nov. 25.

HOW LONG DO EGGS KEEP ?

HOW MANY EGGS DOES A QUEEN AVERAGE PER DAY DURING THE YEAR ?

By Ph. J. Baldensperger.

How long eggs will keep is another many-sided question; for, while in a very cold or cool climate they may be spoiled in a few days if left exposed to cold nights, so will they dry up if left out in very hot weather; while some eggs—I suppose the most vigorous ones—will keep ten days or more in fairly good weather. Out of the number, if you try a comb full of eggs some seem to dry up a few hours afterward, while others stand several days, and a very few stand ten or more days. Sealed brood will resist longer. Even the chilly drones will live as long

as possible. I knew a full frame of drone brood, years ago, in Palestine, which I had discarded, and for the time being I did not know where to put it, so I left it in the honey-room. Well, 17 or 18 days later I went and uncapped the brood and found them as vigorous as though they had just been taken out of the hive. This was in July. Again, this year a colonel bought a hive of bees (Algerine-French) of me. In his absence his gardener wanted to work around the hive, and shut it up, leaving them thus imprisoned for 36 hours in the heat of the July sun. Naturally, all were dead. This was July 20th, 1895. The servant brought me the hive and combs, to give them another stand instead. I had very much to do; and to avoid a bad smell, etc., I gave the five combs containing the dead brood. I knew by experience that such brood of suffocated hives invariably died with the bees. July 30, fully ten days after the accident, I looked for the comb containing dead brood. To my astonishment, more than half were out and crawling out, but in a lamentable condition—dwarfed. The fuzz seemed stuck to the body; the wings were badly developed; they had outlived the catastrophe of their elders, but it was not worth while to have such bees, for they only barely lived.

A queen can lay 3000 eggs a day, but not every day. Here are observations on a colony of bees I followed in Palestine, January to December, 1891. As nearly as I could make out, the colony numbered some 10,000 bees Jan. 1.

	Daily average.	Total.
Average laying from Jan. 1 to 20, '91,	100	2,000
Spring waking-up, Jan. 20 to Feb. 7,	666	11,988
Almond flowers, Feb. 7 to March 3,	790	16,800
Beg. of orange-blossoms, Mar. 3—18,	2333	34,995
Full orange-blossoms, Mar. 18, Apr. 10,	2660	57,200
Beg. of no flowers, then cactus, Apr. 10 to May 21,	1000	40,000
Chaste-tree blossoms, May 21, June 17,	2111	56,997
Chaste-tree, then thyme, June 17, July 10,	2277	50,094
Thyme and end of it, July 10, Aug. 3,	1250	30,000
Thistles, Aug. 3—29,	460	10,960
Honey in the hive, Aug. 29, Sept. 13,	20	4,000
Peppermint and others, Sept. 13, Oct. 14,	115	3,000
Nothing outside, Oct. 14 to Nov. 11,	25	1,000
Nothing outside, Nov. 11 to Dec. 10,	28	1,000
Nothing outside, Dec. 10 to 31,	0	
		320,034

About the same at the end of the season as regards the number—20,000 bees. At all events, this gives us an average of 76 eggs a day for 365 days, or 1760 eggs a day if we take the honey-flow season from March 3 to August 3. The colony did not swarm, and at the end of the season it was reduced to very nearly what it was in the beginning; 300,000 bees were hatched, and passed away; the hive had produced nearly 180 lbs. of honey. This honey was taken by the extractor, April 10; April 18, orange-blossom honey; June 13 to 29, chaste-tree honey; July 10 to August 3, thyme honey.

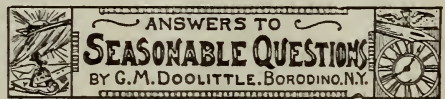
Where the bees of a hive go to is, of course, to be attributed to divers accidents—visits, etc. The average bee's life during a honey-flow is

between 35 and 40 days; but this is only the average; for suppose we introduce 6000 eggs, newly laid, into a colony, mark well the difference, take blacks for yellows or yellows for blacks. After the 21 days required to hatch, and 40 days supposed to be a bee's life, you can hardly find a hundred—often less—in some hives. Even 35 days is the extreme limit. The few bees that remain are worn out, and can hardly be distinguished. Where they went to is: 1. Their work wearing them out; 2. Winds, rain, cool weather, overtaking them while far from their hives; 3. Birds, reptiles, insects, spiders, which lurk for them either at the entrance or in the air or on the flowers. The nearer a bee arrives to or passes the thirty, the easier it is caught or killed. It seems, of course, at first sight, that the number of these losses is too small; but it must always be remembered that it is the infinitely small that forms our doings, sayings, and surroundings.

Great streams from little waters flow;
Great oaks from little acorns grow.

I find very nearly the same figures as the foregoing given in a hive I observed this year at Nice and in the Alps; and I find the average of the honey money months, March 14 to August 3, 1857 per day—almost 100 eggs more here than in Palestine, without giving as much honey—not very from half the amount only. I extracted, too, May 19 to June 3, orange-blossom; July 13 to 27, and August 14, lavender.

Nice, France.



PREPARING FOR NEXT SEASON.

Question.—Having my bees all fixed for winter, I wish to know what I can best do during the coming winter months to be of the most advantage to me for next summer's operations with the bees.

Answer.—The apiarist who is to be successful has little time to waste; and I judge our questioner is made of the right material for a successful apiarist, for he wants to know what to do next. Right here I wish to say that, if any have started into the bee-business on the supposition that "bees work for nothing and board themselves," they had better get out of it, for no success can be obtained along that line. As soon as the bees are properly prepared for winter, which should be as early as November 15th to December 1st, we are ready to go to work for the next season, and so we commence operations at once, remembering the proverb of the ancient wise man who says in the "good Book," "Seest thou a man diligent in business? he shall stand before kings."

The first work is to get our wide frames, or cases, and sections which have been in use the past season, in readiness for the next harvest. Get them around, and scrape off all the propolis adhering to the tin separators and all the bits of comb, should there be any, fastened to the bottoms of the wide frames. All these bits of comb, as well as all others, should be saved; and to best save them the wax extractor should be close at hand, and all waste pieces of comb put into it during the whole season. As often as it is full, get out the wax and have it ready to fill again. All sections which are partly filled with honey should have the honey extracted from them (unless you think you will need it to feed in the spring), as the honey will not correspond in color or quality with that which the bees will put in to finish out the sections the next season. To extract this nicely, fix a shelf close to the ceiling of your room; put the honey thereon, and keep the room so warm that the mercury will stand at 90 to 100° for three or four hours before you commence to take the honey out. By placing the honey near the ceiling we do not need near the fire to heat it that would be required if placed on the floor or a bench. These partly filled sections, if extracted without warming, would all be ruined, so far as the combs are concerned, and the apiarist's prospects of a large yield of honey the coming season would be ruined also; for, according to my value, they are better than money in the bank. After the honey is extracted, these sections are to be put in the center wide frame for each hive, or, in other words, are to be used as "bait sections," which should always be placed in the center of the sections on top of the hive, so as to secure an early commencement of work by the bees in the sections, and so the full sections shall not all come off at once, which would cause the bees to be loath to enter a second lot. Fill the rest of the wide frames, or cases, with empty sections, each having a starter of *thin* foundation in it, or fill the sections will full sheets of foundation, as you prefer. Having all complete, pack them away where they will be ready for use, at a moment's notice, next June.

Our next work is to secure our material for further sections by buying or otherwise, and make it up. To arrive at the number I wish, I allow 150 one-pound sections for each old colony I expect to begin the season with, in the spring; and after 25 years of experience I find this estimate not far out of the way. It is well, always, to be sure and have enough, for it is far better to have a few sections left over than to find our sections exhausted in the midst of a good honey-flow. Many put off this getting-ready part till spring, so that they may know how the bees winter; but the one who expects to make a bee-keeper worthy of that name will not do this; for if the getting-ready part is put

off till just before the honey-harvest, the result almost always shows a greater or less loss.

Having the section part all in readiness, we next make what hives, frames, covers, etc., we think we shall wish for use the next season. Having these made, wire the frames and put in the brood foundation, so this part will be in readiness also, resting assured that the bees will work this foundation just as well when wanted as they would had it been put in the frames an hour before placing in the hive.

After having the frames thus prepared, place the number you wish to use in each hive, and pack all nicely away.

Then there are the shipping-crates for honey, to be gotten ready; shipping-cages for queens, if we raise queens for sale; and any thing or every thing which we have planned by way of experiments which we wish to try in the near future, all of which, as far as possibly can be, should be prepared during the wintry days so that, when spring opens, we shall have nothing to do but to give our whole attention to the bees.

If you are to succeed in the bee-business you will prefer to do these things, and find pleasure in doing them, rather than idling the winter away waiting for spring to come to see "what will turn up" with the bees and your business. Above all else in importance is a thorough knowledge of apiculture; and the long winter evenings which are now here are just the time to gain that knowledge. Get around the back volumes of GLEANINGS and other bee-papers, if you have them; also, if you do not have them, procure one or two good books on bee culture, and read them thoroughly, so as to put what you learn in practice the next season, and thus you will have, in the majority of cases, an answer to what would be a puzzling question to you otherwise, in your own head, instead of having to go to some one else for an answer, just at the busiest season of the year. In these ways a person can be always advancing, instead of standing still or retrograding. Don't be found around the country store or saloon, winter evenings, sitting on dry-goods boxes and barrels, filling the minds of others, or allowing your own mind to be filled with idle gossip, and often worse than idle gossip, or spend your time over an old dingy checker-board, or a musty pack of cards. Perhaps some of these might do, if the hours hung heavy on our hands; but these things are not in place for an energetic, wide-awake bee-keeper with plenty of unread bee-literature at hand. If you are not enough interested in the study of bees to learn about them winter evenings, preferring the places and things above mentioned, to the study of bees, I can give you no assurance of success; but, on the contrary, shall be obliged to predict only a failure, as all of my knowledge of the business compels me to say

that in this, as in all other pursuits, success comes only to those who make some sacrifices to attain the desired end.

announcement says the new journal will "be here to stay."

OUR readers will notice by the last paragraph of the Rambler in this issue, that the series of Rambler articles is to be discontinued. I know that these articles have been appreciated, by the many expressions of approval that have come in from time to time. If still desired, perhaps some arrangement may be made whereby they may be again started, or something else in their place from the pen of the Rambler be substituted. I should be glad to receive expressions from our readers.



SIXTEEN pages extra this time, and 5000 extra copies, making 15,000 in all.

OWING to the space taken by the Langstroth memorial in this number we are obliged to leave out much of our regular matter.

As will be seen by the honey column elsewhere, honey is selling very low. The trouble is, bee-keepers are rushing their honey too much to the cities, meeting sharp competition.

REPORT of the bee-keepers' Congress at Atlanta will be found in the department of Travels by A. I. R. He reports a good meeting, and believes he has brought home from that convention a good deal of value.

MR. BALDENSERGER, on page 951, gives an interesting table of the daily average of egg-laying by queens in Palestine. The smallest number was 100 per diem, and the largest 2600. While a queen can lay 3000 eggs in a day, she doesn't often do it.

MR. JAMES HEDDON, of Dowagiac, Mich., requests me to say that, owing to a bronchial trouble, caused largely by the "breathing in of the odor of the bees, and their poison," he has been obliged to suspend the publication of his paper, the *Bee-keepers' Quarterly*.

IN this issue there is, perhaps, the most complete history of the movable frame in its various stages of development, up to the perfected frame of Langstroth, that was ever published in any one journal or book either. It is a significant fact that leading apiarians in Europe as well as America agree as to the great superiority of the frame given us by the father of American bee-keeping over others that preceded.

FOUR, and perhaps five, bee-journals (I can't quite keep track of the number) have died in America alone during the year just closing. The new year will help to fill up the gap by the arrival, on Jan. 1, of what will be known as *The Pacific Slope Bee Journal*. It is to be published by the Bennett Bee-hive Co., Los Angeles, Cal. Price is to be \$1.00 per year. We wish the new (ar)rival success and a happy new year. It seems to me there ought to be a good field for a bee-journal in the greatest honey section in the world; at all events, the

WHY BEES SPRING-DWINDLE more in the cellar than outdoors (and I think it is generally conceded that they do) may perhaps be found in the very possible explanation put forth by R. McKnight, in this issue. It has generally been held that an unvarying temperature in the cellar was desirable. But here, perhaps, we have been making a mistake. Bees outdoors are surely not subject to a uniform temperature. With us it varies from 60 above to 10 below zero. A cold spell rarely lasts longer than three weeks. This is a timely and important question, and I hope it will be further discussed.

OUR CHRISTMAS NUMBER.

NEVER before, I think, has it been the lot or privilege of any bee-journal, certainly not of GLEANINGS, to publish in any number such a list of articles from such eminent bee-keepers and writers on bee-lore from all over the world as in this our Christmas issue. Representatives from seven different countries have spoken, and six of them have sounded the praises of Langstroth. Six different bee-editors—two of them ex-editors—have contributed to the Memorial. Besides the usual number of illustrations and other general matter, A. I. R. himself is actually writing on the subject of bees. See his department. There, there! I didn't mean to blow our own horn; but somehow it has been a real pleasure to me to think that we could suitably pay our respects to the memory of Langstroth. It is no little source of gratification that bee-keepers and bee-editors, without regard to country, have been so generous in their responses; and to our friends across the water I desire, in the name of the American bee-keepers, to express especial thanks.

THE CALIFORNIA BEE-RANCH, ON PAGE 941.

I CONFESS this picture brings a host of pleasing recollections to mind. On almost every bee-ranch in California the extracting-house is invariably located on high ground, usually near the roadway. The honey runs from the building through a pipe, into a huge can made of galvanized iron. Some of these cans are large enough to hold a ton or more. This can is also located sufficiently above the driveway, or

some wagon-road, so that the honey may be drawn from this large tank into barrels or cans that stand almost on a level with the bed of an ordinary wagon. In this way the honey is loaded up ready to be taken away without any heavy lifting at all. Where the hives are located on lower ground than the honey-house the combs are frequently run up to the honey-house door, on a suitable car, cart, or wheelbarrow. In the picture mentioned we get a glimpse of the apiary just a little above the honey-house. So you see it is downhill work from the time the honey is taken from the hive until it is ready to load.

A. I. R.

DIFFERENCES OF OPINION ON HOFFMAN FRAMES AND HONEY-BOARDS.

FRIEND Hutchinson can't understand how such "bright practical men" as his Medina friends could adopt the Hoffman frames. I suspect it is all because he hasn't tried them—at least, as we have. But, say! I can't see how such a bright practical man as my Flint friend can use and like the *eslat* honey-board with all its attendant burr-comb attachments. With our Hoffman frames we are practically free from the trouble. Clearly, here are differences of opinion; but they are, I am sure, honest differences.

I am willing to admit, however, that there are those whose ways of working have been such that they could not like the Hoffman, and for that reason we give our friends the choice of several styles—one reversible, one loose unspaced thick top, and one old-style Langstroth, pure and simple, with top-bar $\frac{3}{8}$ inch wide and $\frac{3}{8}$ inch thick. This last requires a honey-board, which we also sell, for those who want it. We may also, for those who may prefer, add to the list a thick-top frame with some form of metallic spacer—a Stephens or some form of furniture-nail spacer.

I tell you, friends, we can't all like the same things or all see things alike.

FEEDING BACK; WHEN IT DOES AND DOESN'T PAY.

On page 856 we published an article from Doolittle that seemed to show that feeding back didn't pay. While I think that, as a general rule, it is not profitable, I do not wish to overlook the cases where it apparently is so. In a recent article in the *Progressive Bee-keeper*, it seems to be shown that it can be made a success; but friend Flanagan says, in summing up, "If one has time on his hands, and plenty of drawn sections, . . . and plenty of cheap extracted honey, it may pay; otherwise, *decidedly not*." Bro. Hutchinson, in commenting upon this article in his own paper, says:

But very little profit can be made in "feeding back" unless there are partly finished sections as a foundation. Sections filled with undrawn foundation won't answer. I can't explain why; I simply

know that too large a proportion of extracted honey is required as compared with the amount needed when partly finished sections are used. With plenty of these on hand, and the right kind of bees, feeders, and weather, there is no question but what "feeding back" may be followed with pleasure and profit.

First comes the selection of colonies. Blacks are first choice, with hybrids a close second; next come dark Italians. No great success can be made with light-colored bees. The brood-nest must be contracted to not more than five L. frames, and better results are secured if only three frames are left in the brood-nest; but the strength of the colony is likely to suffer if contraction is carried to this extent and very long continued.

THE WEIGHT OF BEES AND BEE-LOADS; THE PRACTICAL SIDE TO THIS AND OTHER SUCH QUESTIONS.

THE editor of the *Review*, while admitting that it may be interesting in a scientific way to know the exact weight of a bee and the amount of nectar it can carry at a load, fails to see any practical benefit to the honey-producer. If our printed matter were to be confined simply to the methods for converting the labor of our minds and hands into bread and butter, and honey to put on it, some of the best literature of our bee-journals would have to be eliminated.* Man does not live by bread alone, neither should he try to. The practical bearing on some questions is not always at once apparent.

In the case of the bee's weight, or the weight of honey it can carry, there is a practical side. The knowledge of the average bee-load of nectar gives us the key to the solution of the problem of the number of bees necessary to carry a pound of nectar, and the number of trips that have to be made to the fields. Indirectly we learn how many workers a colony should have in order to get the best results from a certain honey-flow. But perhaps friend Hutchinson would ask, "How about the weight of a bee?" In order to know the weight of a bee-load we must know the weight of the bee itself.

Then, too, there have in times past been all sorts of rude guesses as to how many bees there were in a ten-frame colony. Our knowledge is now much more exact; and hence, in discussing practical questions—those that involve bread-and-butter-getting—our comparisons and our statements of bee forces will be more in keeping with the facts, and hence lead to more exact results.

BEE-JOURNALS AND THE SUPPLY BUSINESS.

Various comment has been offered in some of the bee-journals as to whether the *American Bee Journal* is harnessed to the supply-business or under the wing of GLEANINGS now that its editor, Mr. York, has been engaged to manage

*The Langstroth memorial in this issue, for example, does not have much of practical value to the honey-producer, but it does greatly enrich our bee literature.—ED.

the Chicago office of The A. I. Root Co. So far as the *American Bee Journal* is concerned, it is just as independent as before. It has no connection, pecuniarily or otherwise, with GLEANINGS or its publishers. As Mr. York was an old wheel-horse in the supply-business under Thos. G. Newman & Son, and as the successor of that firm had sold out its business to us, Mr. York, by virtue of his experience and general acquaintance with the territory, was engaged to manage the Chicago branch office; and warehouse rent, insurance, cartage, freight, and stationery, etc., are paid by us. But suppose the publisher of the *American Bee Journal* did open up a supply-office, the same owned and controlled by himself; would that necessarily weaken the influence of his paper? If he were selfish, and inclined to "boom his supplies" irrespective of their merits, through his journal, he would hurt it; but he is not disposed to do any thing of that kind.

Mr. Hutchinson, in writing upon the subject of journals and the supply-business, says that he doesn't know that "there is any thing especially praiseworthy in an editor keeping out of the supply-business;" that "the selling of supplies allows the dealer to publish a journal at a lower price;" that "most of our bee-keeping editors, if not all of them, are pretty fair in allowing competing goods to be described in their journals," and that "there are no bee-journals that can be called 'house organs.'" Friend H. closes up in this way: "I must admit that my views regarding a publisher also being a dealer have been somewhat modified since I have been able to look at the subject from a publisher's standpoint." These statements, coming as they do from one who publishes a journal practically independent from the supply-business, are, to say the least, kind and fair toward those who conduct the two together. Surely it would be no very sad thing if Bro. York should have even a financial interest in the supplies. So far as GLEANINGS is concerned I am sure I have tried to give our competitors a chance in our Trade Notes department to show their goods. Often, too, I have taken the pains to call for articles that rather "sat down" on our goods, and, as some might call them, on my pet notions. A journal, to be a journal at all, must let all sides have a fair hearing.

THE NEW WEED PROCESS OF SHEETING WAX FOR FOUNDATION-MAKING.

THIS is proving to be a great success. Yes, the new machine feeds a continuous sheet of wax, any thickness, from between a set of dies or parallel bars to any desired length—a mile long—without stopping, if need be. In practice, however, the wax is rolled up upon bobbins holding about 25 lbs. These bobbins are then set in a set of bearings (in a vat of warm water), just back of the foundation-machine. The

free end of the sheet is fed into the rolls, and, presto! the whole bobbin of sheeted wax can be reeled off without stopping the mill. In practice, however, again, the foundation-mill reels off a length, and stops where the sheet is cut off. A pressure of the foot applies the power, starts the mill, and more is reeled off, and cut to the desired length. We have our plans laid, however, to run the wax through the mill, the whole 25 lbs., without stopping. An automatic cutting-off device will then in the mean time cut the sheets up into the required lengths.

This is not all. A new and better product is secured. The wax, besides being of an absolutely even thickness, is much more beautiful and transparent. Indeed, some of it, even before it is milled, looks almost as transparent and beautiful as rock candy. Nor is this all—it is tougher and yet more pliable.

It may be well to state to those not familiar with foundation-making that the old process of sheeting involved dipping a strip of wood one or more times into a deep vessel of hot wax. The adhering film, after being dipped in water to cool, was then stripped off. Besides this labor of sheeting in short lengths, there was the labor of starting the sheet into the mill, stopping it to pick off the end from the rolls, and starting again until rolled out. This process had to be gone over again with each sheet.

It will be seen that the new Weed process effects a great saving of labor. There are no more short-length sheets, no back-breaking process of dipping, no starting and stopping the foundation-mills at frequent intervals, and no picking and picking to get the sheet off the roll.

The new machine runs almost alone now; but an attendant stays by to operate, occasionally, the valves to regulate the flow of wax and the cooling process.

Mr. E. B. Weed, formerly of Detroit, later of Brantford, Can., and now of Medina, is the inventor. Patents are now pending, and I sincerely hope Mr. W. will be rewarded for his pains. For two or three years he has been working and experimenting, with much discouragement. Every one gave it up but he and Holtermann. They knew he was on the right track, but couldn't make a practical success of it. They finally succeeded in overcoming the last obstacle. But the machine was not a success; it was too light, and too every thing in spots. Our Mr. Washburn, the man who first made the roller comb-mills, at once appreciated the weaknesses of the machine Mr. Weed brought from Canada. To make a long story short, drawings were made, patterns gotten out, and in a short time a new and stronger machine was built, with results as above stated.

OUR HOMES.

He shall call upon me, and I will answer him: I will be with him in trouble.—PSALM 91:15.

Thanksgiving day was bright and warm. It afforded an excellent opportunity for some outdoor work that very much needed to be done. Let me explain. Three years ago I described our little greenhouse across the way. I have told you in detail of the strange blundering way in which I made the discovery that greenhouses could be warmed automatically by means of exhaust steam. In my first experiments I was so much afraid the thing would not work that I picked up pieces of old rusty iron pipe, hastily put them together, and pushed them up through the tiles. Somewhat to my surprise, and much to my delight, the thing worked beautifully. Summer and winter, month after month and year after year, the hot water went its rounds, giving out its heat overhead in the greenhouse, and then going back to the point of starting, to be warmed up again. Last winter, however, while I was in Florida the circulation gradually slackened up, and during the most severe weather the pipes cooled down in spite of every thing that Ernest and the boys could do. They were cold when it was most important that they should be hot.

It was so late in the season when I returned, that we managed to get along with our stuff. When I went at it this fall to straighten the thing out, the difficulty seemed to be somewhat obscure; so the matter was neglected until Thanksgiving day. On that day, with the help of Frank, one of my faithful boys, I decided to *locate* the mischief, at any rate. Instead of being in the greenhouse, it proved to be somewhere in the *underground* line of pipe that the obstruction lay. Now, this line of pipe is not only about two feet under ground, but it also runs through a six-inch tile. We could dig *down* to the tile, but we could not lift out a length without breaking it, because the iron pipe is in the way. Frank and I made excavations in different places on Thanksgiving afternoon, but did not succeed in locating the trouble at any exact point.

The little pipe I used to make my first experiment with was only $\frac{3}{4}$ inch in diameter; but it worked so nicely there that it had stood doing its work all these years. One thing I decided on Thanksgiving night was that I would never more use *old* pipe to put under ground; and I also would never *again* be guilty of using pipe as *small* as $\frac{3}{4}$ inch. One inch is small enough and cheap enough; but $1\frac{1}{4}$ would be better.

On Monday morning I was to go to Atlanta, so there were only two days left—Friday and Saturday—and these two days the last of November were very apt to be stormy and cold. During the night I thought over all the things that were to be done the next day. First, these hot-water pipes were to be fixed before the weather became any colder. Some additional radiators were to be put in at the house also. Some more copy was to be furnished for GLEANINGS, and this was to be out so it could reach the friends around Atlanta, before the convention of Dec. 4 and 5. Other matters were crowding in various parts of the factory.

Friday morning proved to be all that could be wished, so far as *weather* was concerned, and I fairly trembled to think of the number of things I was to look after before I took my trip to the South. By some of my own bungling, there was no meat ready for breakfast; and when a boy went to the meat-market he had to wait nearly half an hour for them to open up shop. The boy who makes it a business to feed

the horses so as to have them ready to hitch up when the whistle blows, also failed to come around. Perhaps it was because it was just after Thanksgiving. The assistant engineer had hurt his finger a day or two before, and the engineer wanted Harold (the young plumber whom I have mentioned before) to *fire* for him. He thought no one else would answer.

Breakfast was finally ready, and had to be eaten just as my men ought to have been getting their orders for the day. It was hard work to obey the doctor's orders to take plenty of *time* for my meals. Then it was a task once more to get the family together after a late breakfast, for morning prayers. Satan whispered that, under existing circumstances, family prayers would better be omitted for just once. As I have never listened to Satan, however, especially when I wanted advice in *such* matters, his suggestion did not amount to very much.

When I got over to the factory, somebody had promised that Harold should do some plumbing for a neighbor; then another man who was hurrying *his* job of piping could not be waited on because half a carload of New Queen potatoes had been hastily piled in the cellar on top of the iron pipes he was waiting for.

Frank and Fred had got the iron pipes apart, and were pushing a wire down through them as far as it could go, to start the accumulations of rust and scale; but the water could not be made to go through, even under pressure. The boys were doing the best they could; but they needed more pressure, and every thing seemed to need more *brains* all around—perhaps brains of mature experience. I called a man who had done such work, and directed him to attach a Whitman fountain pump to the end of the iron pipe, and *force* the water through. Somebody had borrowed the pump. When it was hunted up, the valves would not work. I finally decided that we should have to take a brand-new \$6.00 pump from the stock in the store out there into the dirt and water. But there were not *any new pumps*—the stock had been sold out. The clerks told me they had another kind that was better, but it could not be attached to our iron piping—that is, without too much time and expense.

At this juncture the plumbers over at the house were hindered in their job by lack of some special fittings. The train that was to bring them did not bring any thing. The printers were wanting my last Special Notices, so the form could go to press. I was already overburdened with cares; the beautiful warm forenoon was passing away, and my heart had not been cheered by *success*—that is, very much success—in *any* direction. The helpers were all doing their duty; but wherever I was boss it devolved upon me to say what should be done at this unexpected crisis.

Surely there were burdens enough that forenoon for Thanksgiving day. But it seemed that a still harder one to bear was coming. One whom I had been instrumental in bringing to Christ Jesus was backsliding. The backsliding had got to a point where I must stop right then and there, and decide what was to be done. From what I have written in these Home Papers, and from what you know of me, very likely you will wonder where my faith and trust in an overruling Power were at such a time. Well, I am afraid I had been too busy to ever think of asking for God's help. I am afraid that I had a sort of idea, when I got up in the morning, that I could manage without his help. You see, I am older than I used to be, and am feeling quite strong and well, and I

have had "lots of experiences." But on this particular morning *all* my plans and projects seemed to be failures. I had undertaken things I could not get through with. Saddest of all, I had undertaken to lift a soul out of the miry clay on to the clean strong rock of a faith in Christ Jesus, and *he* was a failure too.

This last burden—no, it did not break me down, but it brought me to my senses. A very earnest and fervent "Lord, help!" welled up from my heart; but I confess that it was without very much faith. Then when I looked at the boys, with their muddy hands and clothing, so willing and patient in doing any thing I wanted done, another "Lord, help!" welled up from my heart; but that, too, I am afraid, was without very much faith. Then I remembered the surgical operation at Battle Creek, and that little couplet from the hymn,

I am weak, but thou art mighty.

Yes, I felt myself *decidedly* weak. I let some of the things go, and walked over to the boys. In a few minutes they had met with success on one of the lines of pipe. The hard water from the windmill tank, that had been coursing through even the galvanized-iron tubing for many months, had deposited an incrustation of chemicals or lime at the lowest point. With a heavy wire and a strong force of water we succeeded in rasping the limy deposit loose so it could be washed out. The missing fittings had been found at one of the shops up town, so the plumbers at the house could go on; while Mr. Warner, with a big stout German and a boy to help, had moved the potatoes, and our customer had his iron pipe.

I began to think that one little earnest fervent prayer was moving things mightily; but an interview with the one who had got back into the miry clay made me feel that it is a far greater and oftentimes more *wearing* and *discouraging* work to try to save a sinner from the error of his ways than to get the obstructions out of a crooked iron pipe that is two feet under ground, inside of stone tiles, and running under various beds of garden-plants besides. Müller once said that it is a much easier matter to get *money* by praying than to *save souls* by praying—especially where Satan had got a strong hold on the lost one.

The battle was not won yet, by any means. More earnest prayer was needed; more lessons were to be learned in regard to my need of divine help. I thanked God for the success we had made, acknowledged my own feeble helplessness, and plead again with perhaps greater faith. It looked for a time as if our pipes would have to be all buried up again until I could get back from Atlanta, without having accomplished anything. I could not bear the thought of this; and yet if I should go to tearing up things much more than I had already done, nobody could put them back in shape in the brief time that was left. The weather-telegram announced a coming storm and colder weather. We had narrowed the stoppage in the pipes down to the lowest point in the piping, and it was not more than 20 feet in length; but the pipe passed right under three or four different beds of plants. The boys had pushed wires in from both ways, and had given up. I asked them to try it once more. Pretty soon a little muddy water came out; then still more; and finally a more slender wire was crowded clear up to the elbow, even though the pipe was crooked. The water came faster, and more muddy, and finally out it shot under full head, sending the pure sparkling liquid out many feet, carrying with it, now and then, lumps of sediment and deposit. The pipe was *clean*. It is now all covered up, and the greenhouse is

warm. My Thoroughbred potatoes and other plants are safe.

The spiritual work, however, that I had been trying to do, and which was, of course, of *many times* more moment than the water-pipes, did not prosper so well. Satan was too much for me. His victim had turned back on his best friends. He declared they were all trying to "beat him," and that they had a *spite* against him. Dear friends, have you not noticed again and again how the *real* sinner or the *real* criminal insists that, while *he* is honest and true, everybody else is vicious and bad? He will have it that all good people are trying to injure him; that his best friends have a "spite" against him.

Slowly and sorrowfully I was obliged to give it up. When I thought of the way in which business had been finally pushed along through the day, I felt to "rejoice and be glad;" but when I thought of this other, I felt sick at heart. I felt humbled—yes, a good deal humbled. Perhaps my sad and sorrowful tones may have had some influence on what I said. I spoke very kindly and gently, but I talked very plainly for all that. There was more inward praying that came from a very humble, and, I fear, a good deal discouraged heart. What do you think happened? Why, before I went to bed that night I was cheered by hearing a full and humble acknowledgement of the fault, accompanied by restitution *in full*. It was like the muddy deposit in the crooked pipe. It came little by little; and when the full, frank, and clear confession came out, accepting all the blame himself, and exonerating all of his friends, then I could see the light of the Savior's love shining down once more into the darkened soul—not darkened now, thank God, but full of light and peace, for the dark evil thoughts had been washed out. Satan had lost his hold. The prince of darkness had been banished entirely, and it seemed as if I could almost hear the Master say, "Go thy way, and sin no more."

But the whole matter was not to be allowed to be dropped just then and there. There is a part of that wonderful prayer that reads, "Lead me not into temptation, but deliver me from evil;" and before I started on my trip to Atlanta, several good strong posts of advance guard were put up to keep temptation away; and careful, faithful sentinels have been stationed, not only to guard against any surprise at some future time, but to *cut off*, so far as may be, the avenues where evil may be most likely to again come in.



ON THE WAY TO ATLANTA.

Does tobacco make a man selfish? As we got aboard for Cincinnati the cars were so full that one of our party remarked we had better pay a dollar more and take a chair car, where there was plenty of room; but we concluded to look a little first. I saw a man filling a seat with his valises, overcoat, umbrella, etc., and politely inquired if he could not let me sit with him.

"Why, I suppose so; but why don't you sit with some one else? there are plenty more places."

As I always dislike being where I am not wanted, even if I have a right there. I turned to a man across the aisle: "Why, certainly, and you are quite welcome," was the pleasant and

ready response; so I sat down. It was soon evident, however, that No. 1 did not intend to occupy the seat *himself* at all; for as soon as he had filled the seat he went into the smoking-car. Now, I always prefer a seat next to the window, and I therefore very soon moved the baggage, etc., to half of the unoccupied seat. In due time the owner of the stuff returned. I said to him:

"If you prefer a seat next the window, I will take the other; as you took the seat first, you surely should have first choice."

He looked at me a moment, then, evidently having no more of a fancy to sit by me than I had to sit by him (perfumed with his tobacco smoke as he was) he remarked: "I reckon I had better go back and ride in the smoker," and I saw no more of him until he came for his baggage when at his destination. I afterward noticed vacant seats all over the car. People usually kept out of them because they contained baggage, while the owner paid for one seat and used two. Well, if the railroad folks prefer to run a smoking-car for accommodation, it is all right, *certainly*; but I wonder if it has occurred to them that, while they do so much gratuitously for *tobacco-users*, they might certainly do a *little* in the same line for those who *ride wheels*. Do more people use tobacco than ride wheels? We shall soon see. Which is of more *real* importance to a man—his wheel or his—"smoke"?*

As we get down into Georgia and into the region around Atlanta I notice the ground on the hillside is almost all terraced; or the rows of corn, cotton, sugar-cane, etc., are planted so the furrows all run around the hills, exactly on the plan given in our tomato-book.

It is interesting to note that friend Day's plan is being carried out so generally. Where the best crops are grown, the whole plan in detail is fully carried out; and when it is so done, there is next to no washing, and no gully-ing at all.

Our trip to Atlanta was a very pleasant one. The railroad officials were pleasant and obliging; and although the weather was quite severe, even through the Southern States, we suffered no inconvenience at all in traveling. By taking some rations of beefsteak along, nicely cooked by Mrs. Root, I managed to have my meals regularly, and of the right kind. The hot water was easily managed by taking along a tin canteen. This, when filled with good water, was kept hot on the steam-pipes; or where there was a hot-water boiler on the car the porter kindly permitted me to place my canteen where it would keep hot and out of his way. I find it better to speak to the porter before taking liberties with his heating-apparatus, for he does not like to have passengers meddling with his department without permission. A little explanation and courtesy always secured all the privileges that I needed in this line.

As I have several times described the country between Cincinnati and Nashville, I need not go over it again. You will notice by the map that at Nashville we start out eastward toward

Chattanooga, and thence on toward Atlanta. The ride through the mountains affords a grand study to any one who is a lover of nature. It is always exceedingly interesting to me to look over the problems that were surmounted in building a railroad through such mountainous country. Usually they follow streams; or, as they would say in California, up one canyon, to the summit, and down another on the opposite side. Through Tennessee and Georgia a good deal of the road had to be cut *through* the hills more or less. The road curves around the hillside, first on the side of one hill then on the other, occasionally getting through by cuts so deep you can hardly see the top as you look out of the car-window; and where the hills are very high, and the expense will warrant it, a tunnel is cut right straight through. The scene is occasionally varied by beautiful fertile valleys, along the side of clear rivers. A good deal of the land is, of course, unreclaimed and unused. The valleys, however, are mostly under pretty good cultivation, and in many places the ground is cleared and under cultivation, up almost to the summits of some of the mountains, on hillsides where you would think it was almost impossible to do any farming profitably. Some of this high land, however, is very valuable, so I am told, for certain crops.

Apples of great beauty, and of about the finest coloring I ever saw anywhere, are raised all through Georgia. At one station Mr. Calvert informed me they sold ten large beautiful apples for only a nickel; and the whole carload of people seemed to be eating apples in a way that I hope did them all good—at least, it did me good to look on; but I had some fears that at least a part of the crowd could not stand so many of them at all hours of the day; and before we got through, even Mr. Calvert, with his strong and rugged constitution, was obliged to admit that it would have been better had he eaten fewer, or taken them at regular meal-time.

Through Georgia they prepare the ground and sow oats all through the month of December. They were not doing it when we made our trip, however, for the ground was frozen hard, even in the middle of a sunshiny day. One of the passengers informed me that oats were very seldom injured during average winters. I made inquiries in regard to winter oats. He said they had tried them more or less, but the common variety seemed to suit their locality best. The prevailing crop, however, seemed to be cotton; and I am told they raise cotton year after year right on the same ground, using little or no fertilizer except cotton-seed meal and the stalks, etc., left after the cotton. The cotton-fields, as a rule, are remarkably clean, and free from weeds; but judging from the size of the stalks, a good deal of the farming, like that here in the North, is not by any means what we would call high-pressure farming.

Perhaps the greatest foe to agriculture, especially on the hilly or uneven ground, is the washing and gully-ing; and I was greatly pleased to note that, all through the South, the remedy proposed in the back part of our tomato-book is the one in common vogue—running the furrows around the hills instead of straight across the fields. This is some trouble; but if it is done right, it seems to be a perfect remedy for washing. The Department of Agriculture, Washington, has put out a very interesting bulletin (No. 20), entitled "Washing Soils; how to Prevent and Reclaim them." The teaching is almost in line with that given by friend Day.

Atlanta is a very beautiful city of about 100,000 inhabitants. The streets are filled with

*The following newspaper clipping comes in very well right here:

§ The bicycle has proven a beneficent apostle for reform in more ways than one. If the assertion of the United States *Tobacco Journal* may be accepted, which declares that the bicycle has caused a reduction for the last year of seven hundred millions in the consumption of cigars, the reason assigned being that men seldom smoke while riding a wheel. It has doubtless caused, also, a large falling-off in doctor's fees, and left the patient who rode it in far better condition than if he had swallowed the whole contents of an ordinary drugstore.

people; large manufactories of different kinds are running in full blast, presenting a scene of activity and industry much like our progressive and growing northern cities. We found accommodation at Hotel Jackson at 75 cts. per day for room and bed, as given on page 901.

This includes electric lights and steam radiators, even clear up into the fifth story, where we found accommodations. An electric elevator is running constantly to carry people and baggage up and down.

This was a special arrangement (75 cts. a day), however, made for bee-keepers, with the understanding that they "double up." This means that you occupy a bed in a room where there are several beds. If the house is crowded you are to share your bed with somebody else. Our room contained three beds, and part of the time six occupants. Of course, they were not all bee-keepers, but we managed to get acquainted so that we had a very pleasant and social time. Meals are given on the European plan, and you can have a plate of toast for five cents, and a cup of tea or coffee for five cents each, besides various other five-cent articles, if you wish to be economical. You can also order a meal that will cost a dollar or more, if you feel inclined that way; or you can economize by carrying a lunch-basket, and sit down at a table, and order only a cup of coffee. I confess I like this plan very much indeed. For 40 cents I got a good sirloin steak, nicely cooked, with very little delay; and with the zwieback that I brought with me from home I had just what I wanted, and no more, at regular hours, without a bit of trouble. There are various places in Atlanta where you can get very good meals for 25 cents; a fair one for 15 cents; and there are even places where you are invited to come in and try their *ten-cent* meals. We did not try any of the latter, but were assured that many kinds of good wholesome food could be procured, nicely cooked, at this low figure. I have taken this pains to particularize, because reports have been circulated that one could not get along at the exposition without paying 50 cents or a dollar for meals.

While I am on the subject, perhaps I should mention that we had a very nice dinner on the exposition grounds, for 50 cents each, at the Georgia barbecue. My first question was, whether I could get a dinner all of meat if I wanted to. The waiter rather smiled at my query, and said he guessed they could hit my wants to a dot. Then he brought in a huge platter of mutton, roasted barbecue fashion, that made me feel at once that I should not go hungry. After dinner I was invited to see how they cooked things at a barbecue. Several long trenches were made along a side-hill—that is, they were on a slant. These were filled with firewood, which was kept burning until the earth, bottom, and sides, were as hot as a brick oven. Then the various animals were slaughtered, cut into quarters or huge chunks, and through each quarter or chunk two iron rods were thrust, these rods reaching from one side of the pit to the other. Before the meat was put on, however, the fuel was all removed, except a bed of glowing coals in the bottom. The meat is then turned over on the iron rods, and given sufficient time to become thoroughly cooked all through. I can hardly explain why; but meat cooked in this manner, close to the hot earth, has a peculiar rich flavor. With the meat are served potatoes and other vegetables, and a sort of soup made of tomatoes, green corn, and other vegetables. If I am correct, the food is all cooked in these earth trenches. It makes one think of the Bible stories of olden time, where hundreds or thousands of domestic

animals were roasted at a single feast; and the barbecue idea certainly seems calculated to encourage the consumption of more meat and less of other things.

Harper's Weekly describes the stew, or soup, by the following graphic account of how it is made, from one of the colored cooks:

"Well, yer see, yer jest takes de meat, de hog's haid, an' de libbers, an' all sorts er little nice parts; an' yer chops it up wid corn an' permattuses, an' injuns an' green peppers, an' yer stews an' stews tell hit all gits erlike, an' yer kain't tell what hit's made uv."

They add:

"It is a necessary adjunct of the dinner; and when it is made sufficiently hot by a sufficient quantity of pungent peppers, it is indeed a rare appetizer."

THE ATLANTA BEE-KEEPERS' CONGRESS.

The gathering of bee-keepers was not large, probably owing to the severe weather; but what we lacked in numbers we made up in quality, for we had some of the best honey-producers present to be found in America, and perhaps some of the best and most successful on the face of the earth. I was much gratified to meet so many of the good friends who entertained me so well while in Florida last winter—W. S. Hart, O. O. Poppleton, A. F. Brown, and Wm. P. Wilkinson. Mrs. Harrison came in the second day; and our veteran friend, Mr. C. VanDeusen, of Sprout Brook, N. Y. (proprietor of the wired flat-bottom comb foundation), was present during the whole session. Friend V. is now 81 years old, and came to the convention quite unattended. He looks quite hale and hearty, and one would hardly suppose by his looks that he was really so old. Like myself, he ordered *hot water* instead of either tea or coffee; and perhaps this may give us a suggestion as to the reason why he holds out so well. I noticed, also, that both himself and Mrs. Harrison were choosing mostly the lean-meat diet as I did. Our friend J. D. Fooshe and wife were also in attendance. Friend F. is getting to be a veteran in queen-rearing, as you may remember from his advertisements.* Dr. J. P. H. Brown, also one of the old wheel-horses in bee culture, seemed to be the prime mover of the whole affair.

Discussion was opened by a paper from Mr. Charles Dadant, in regard to why bees swarm. Friend Hart told us he had managed his large apiary for several years past with so little annoyance from natural swarming that it did not amount to more than three or four swarms from a hundred colonies on the average. His principal remedy (together with the proper shade from the great scuppernong grapevines), is to take the honey out of their way, and give both queen and bees plenty of room. You will remember he uses a large solar evaporator for ripening his honey. This enables him to remove it when only a very little of it is capped over.

Some discussion resulted as to whether honey ripened by the sun was fully equal to that ripened in the hives. Friend Hart gave us pretty conclusive evidence that his product was certainly not *very* much behind that of other bee-keepers. Friend Poppleton thought the same result could be accomplished by hav-

*Friend Fooshe has a contract to furnish Buist, the great seedsman, with 22,000 lbs. of seven-top turnip seed. The plants are now growing on 32 acres; and when they come into bloom all at once it ought to make a boom for a pretty large apiary, and then we can tell what honey is like, gathered from seven-top turnip. Providence permitting, I may visit his place when the honey-yield is at its height.

ing large hives, or the "Long Idea," as it has often been called, of spreading combs out horizontally, so as to give the bees ample room. This would prevent the necessity of such frequent extracting.

Considerable discussion followed in regard to the nameless bee-disease, or bee-paralysis. Friend Poppleton thought he had lost tons of honey by the damage resulting from that disease. The general testimony seemed to be that no remedy yet proposed hit all cases. Quite a number thought it was worse with Italians than with the common black bees. I asked if we had a queen-breeder in America who could furnish us full-blooded black queens at a low price.

Pretty strong evidence was brought forward to show that neither bee-paralysis nor foul brood is ever carried from one place to another by buying and selling queens. Of course, if the feed sent with the queen contains honey from foul-broody hives, it might spread the contagion; but the queen herself, and the attendant bees, with ordinary care, need never spread either of these diseases.

A bee-keeper near Atlanta, Ga., reported 700 lbs. of honey from cotton, during one season, from 30 colonies; but the cotton-plant yields honey only occasionally.

WAXING BARRELS, ETC.

On page 899 we read, "A barrel or keg properly made of the right kind of wood needs no waxing." I confess I felt uneasy when I first saw it. The question came up in our congress, and both Mr. Hart and Mr. Poppleton, and all the Florida bee-keepers, declare that every barrel must be well waxed or paraffined. Friend Poppleton suggested that honey that ordinarily soaks into the wood would alone pay the expense of waxing. The waxing process is the quickest method of ascertaining beyond question whether the barrel is absolutely tight. Only about a pound of paraffine, costing 15 cts., is required if the waxing is properly done. First, the barrel must be not only thoroughly seasoned, but it must be made hot, either in the sun or by some method of artificial heat. When hot, the hoops should be driven down tight, and fastened. To prevent wax sticking on the outside, friend Hart puts the plug in one of the heads; and, before pouring in the wax, the outside of the head is dampened to prevent sticking. Pour in a sufficient quantity of melted wax or paraffine, and have it hot enough so it will not be cooled off very much in the process. As soon as you get the required quantity into the barrel drive in your plug. The hot wax will expand the air in the barrel so as to make a tremendous pressure; and when you come to roll the barrel over, and twirl it around so as to cover the whole inside, if there is any crack or cranny anywhere the wax will be forced out at this spot. If your barrel is hot enough and dry enough, the wax will never cleave off on the inside. In Florida there is a minute insect that makes small pin-holes in barrels and other utensils; and the only protection from leakage is waxing just before the barrel is used. Cypress wood makes a more perfect and a lighter barrel than any other material. Barrels made of oak, unless thoroughly waxed, will give the honey a taint that may spoil its value, or cut it down considerably. Let us remember that our Florida friends have had much experience in all these matters, for they marketed over 40 tons of honey in 1894, and all from one comparatively small locality.

THROWING OUT THE BROOD WHILE EXTRACTING.

Unless you have a very careful operator a

good deal of the brood is likely to be thrown out with the honey; but this is much more likely to be the case where the small extractors, made only for the L. frame, are used. Large extractors, like the reversible Cowan, and others, are much less liable to do this; but Mr. Poppleton thinks he could throw out the thickest and most thoroughly ripened honey with one of these large extractors, without disturbing the brood at all.

Our irrepressible friend Danzenbaker was present, of course; and it is really worth something to listen to his animated talk about his new hive, and especially his one-pound section, made 5 inches tall, $3\frac{3}{4}$ wide by $1\frac{1}{2}$ thick. This section has been used for several years past by Capt. J. E. Hetherington. Friend Danzenbaker has a long string of arguments to prove the great advantages of this section over the square one. The principal one of these points is, however, to my mind, that, being taller and thinner, it permits of placing 32 sections on top of the hive, where with the ordinary one-pound section we have room for only 24. He claims that the bees enter them more readily because they are deeper up and down, which may be true; and very likely (as there is more surface for attaching it to the wood), it may be a little stronger for bearing shipment. The idea, however, that purchasers at large will pay more for honey in sections of this shape seems to me a little strange, aside from the fact that it is something new and a little different from the ordinary style. It may be, however, that a section of honey something the shape of a testament or hymn-book looks a little better to the general eye than one exactly square. Permit me to say to friend Danzenbaker, and hundreds of others who are getting out new inventions, and especially those who have something new to offer every New Year's day (or oftener still), that it will cost the bee-keepers of the world something like a million of dollars to change the dimensions of their frames and section boxes in common use. At one time in my life I was persuaded that the Langstroth frame was not the best-shaped one. I accordingly adopted what I called the "Standard frame," and urged everybody to go into it, changing their hives and fixtures all over. At that time I had influence enough to induce hundreds of bee-keepers to commence changing their hives. After three or four years, however, I was so sure that I had made a mistake I went back again to the old established Langstroth, and tried to drag all the rest, who had been foolish enough to follow me, back to where we were in the first place. The Standard frame is now almost unknown, and we are fast getting to a point where the L. frame is the principal one in use everywhere—north, east, south, and west. If a general change is ever made, it must, in my opinion, be for *better* reasons than any that have as yet been brought forward.

HONEY THAT NEVER CANDIES.

Several bee-keepers from the vicinity of Atlanta astonished us by declaring that their honey *never* candied. One man said he had never seen any candied honey until he saw specimens on the table before the convention. On being interviewed we found his honey was secured from various sources. Now, it is very peculiar that honey from a certain locality never candies, no matter what the bees work on. There were others present, living not very far away, who mentioned having certain kinds of honey that would candy hard and solid, even when stored in sections, and capped over.

The general account of my visit to the exposition grounds will be given in our next issue.

Special Notices in the Line of Gardening, Etc.

By A. I. Root.

WANTED, SEED OF THE CHAPMAN HONEY-PLANT.

Can any of our readers furnish us some of the above? Every little while it is called for; but we are out, and do not know where to get more. If you have any to offer, please mail us a sample, tell us how much you have, and what you want for it.

OUR NEW SEED CATALOG FOR 1896.

All those who would like our Seed and Plant Catalog mailed them regularly whenever we get out a new one will please tell us so on a postal card, or please be careful to mention it whenever you are writing us on any other matter. We are just now making out a new list of the names of our customers in this department.

SHELLBARK HICKORYNUTS.

Medina County is not only celebrated for its maple-trees, but for its "shellbark" hickories as well. This season there is a great quantity of fine nuts. We have just secured a nice lot which we can furnish at the following very low prices: Quart, 5c; peck, 25c; half bushel, 40c; bushel, 75c. You can have these included with your express and freight order at the above figures. Sample by mail 5c, if you would like to see them before ordering. In localities where they do not grow they are often quite a treat to the children.

A CHRISTMAS PRESENT FOR YOUR WIFE.

A beautiful cloth-bound book—title, "Domestic Economy"—written by a doctor, and one who has made the matter a life-study. We offer it for only 50 cts., although the regular price of the book is \$1.00. If wanted by mail, send 8 cts. more for postage. Make your wife a present of one of these books, and it will enable her during the coming year to save many times its cost. It is a book that will be read clear through by almost everybody who gets hold of it; and you will be surprised on almost every page because you never thought of such simple, easy, short cuts for doing all sorts of things around the home.

GOOD BOOKS FOR A VERY LITTLE MONEY.

We find we have in stock several hundred copies of two of the five-cent Sunday-school books that we have sold so extensively in years past. By some means these got dropped from our price list, and have not been advertised for some time. One of the books is called "Silver Keys." It is an excellent story with good wholesome morals. When first brought out the book sold for \$1.00. We now offer it for 5 cts., postpaid, until the stock is exhausted. The other one, Bunyan's Pilgrim's Progress, is very fully illustrated, and ought to be worth many times the insignificant cost (5 cts.) in any family. Many of our older readers have these books; but we think there are children now in almost every household who will be greatly benefited as well as interested in getting one of them for a Christmas present. Send right off now and we will try hard to mail it to you in ample time to be tucked in a little stocking.

HEALTH FOODS.

In our last issue I suggested that zwieback came the nearest to pure beef of any of the pure health foods I had tried. I find, however, that wheat-germ grits answer about as well when thoroughly cooked. Another recommendation, it costs only 5 cts. per lb., or 10 cts. for a 2-lb. package. Now, many of the friends have found it expensive to get these health foods, either by mail or express, and very few of them care to buy enough to order by freight, unless, indeed, it is to go along with other goods. There is already in the market an article recommended by our Dr. Lewis, and which seems to agree with me as well as the zwieback or any thing else; and that is Pettijohn's American breakfast food. You want to get the packages labeled "Pettijohn's Best." A 2-lb. package costs only 12 cts. at retail. One thing to recommend this article is, that it is already in the general market; and I believe it is kept on sale by grocers pretty generally everywhere. If you don't find it at your home grocery, when you are ordering other goods of us you can include it at

the above price. You can doubtless get wholesale prices by addressing the Eli Pettijohn Cereal Co., Minneapolis, Minn.

CELERY-PLANTS FOR THE NORTHERN FRIENDS.

We have some very nice plants now, ready to take up, of White Plume, Self-blanching, Golden Heart, and Giant Pascal. Good and strong plants, put out now in Florida and other southern localities, make nice celery, which will be ready just the time when they bring the most money in northern cities. Last winter Mr. Andrew Fooseh, of Titusville, Fla., sent five boxes of celery to Philadelphia, which brought \$12.00. See p. 229, last year. Prices of plants, 5 cts. for 10; 40 cts. per 100. If wanted by mail, add 5 cts. for 10 or 25 cts. for 100. for postage.

THAT 86-LB. COLORADO POTATO.

Quite a good many people have been undecided as to whether the above was a fake or a reality. The engraving appeared in the *Scientific American* a few weeks ago, given as a fact. Everybody acquainted with potato-growing should recognize the impossibility of the whole thing, notwithstanding the photo. We investigated, and received a pleasant letter from J. B. Swan, of Loveland, Col., explaining that it was a trick in photography. He did it only as a joke, to call attention to the advertisement of his seed potatoes. He said the *Scientific American* gave the picture on its own responsibility; in its issue the week after, they showed up the hoax; but the admission was not nearly as prominent as the first notice with its startling picture.

A PREMIUM WORTH \$1.50, AND GLEANINGS ONE YEAR, WORTH \$1.00, BOTH TOGETHER FOR ONLY \$1.00 IN MONEY.

The conditions of the above great offer are, briefly, these: To any person who is already a subscriber to GLEANINGS who will send it one year to some locality or some family that has not been taking it; or, in other words, any one who sends us a new name, together with \$1.00, can have, postpaid, 1 lb. of Maule's new Thoroughbred potato. This potato is not offered for sale anywhere to my knowledge, for less than \$1.50 per lb. We do this in order to get our journal introduced where it has never been taken before; and we are enabled to do it from the fact that we have purchased (at large expense) from Wm. Henry Maule ten barrels of this wonderful new early potato. For particulars in regard to the potato, see our Potato Circular, which we will mail to you on application. If you do not want to take the trouble to get a new name for GLEANINGS, make some friend or relative a present of it for one year, and send us the dollar. We will mail the potatoes right along as fast as the names are received—or, at least, until we have some evidence that there is danger of freezing in the mails. So far we have not lost a single pound. Mail matter is now so carefully cared for that there is very little chance of freezing unless you let them freeze while they are being brought home from the postoffice. We think the above makes the matter so plain that there can be no further mistakes or misunderstandings. The new potato is sent as a premium to any present subscriber for getting us a new name, and sending us the \$1.00. Please notice, we do not offer the potatoes for sale at any price. We expect to plant all that is left, ourselves. Those who have hot-beds and greenhouses can probably make no better use of their space under glass than to start these new potatoes now. We have some growing nicely that are six or eight inches high, in our greenhouse across the road from where I am writing. There is no easier plant to grow under glass, in the world, than the potato, providing you keep the frost from biting the foliage; and even if the tops are nipped it sets them back only a little, for they will start right up again. While they are worth \$1.50 per lb., you can make money by growing them in flower-pots or boxes, in the window. And here is work for the women-folks as well as for the men. The potato is a very handsome window-plant, and just now there is money in it. See?

GLEANINGS comes regularly. I know I should miss it very much if it were not on time. Long may the Home of the Honey-bee prosper. Keep on; don't stop the hive question. J. H. GOE.
Mossy Rock, Wash.

Kind Words From Our Customers.

Potatoes received. Many thanks. Long live A. I. Root, son, and son-in law. E. B. RIFE.
Circleville, O., Nov. 15.

GLEANINGS has saved us many times its price. We should not know how to get along without it. The honey crop is exceedingly poor in the country. The fires ran over large tracts of our neighborhood last year. Fireweed followed this year, and that was all that helped us out. Mrs. S. WILBUR FREY.
Plumville, Mich.

I still "think the world" of GLEANINGS. Long may it and its editor live and sow good seeds. We, your Christian readers, are bound by stronger than ordinary bonds to you. Long live the "admirable society." It does good to belong to it, even if only to admire others for their commendable qualities. A. MOTTAZ.
Utica, Ill., Oct. 17.

THAT CRANE SMOKER, AND WHAT IT WILL DO.

I received the Crane smoker there has been so much talk about, and I must say it is the best I ever saw. We need no better; for with it we can smoke every bee clear out of the hive, then smoke them in again. I know this can be done, for I have done it. Cumminsville, Neb. JAS. PRATT.

AN EXCELLENT SERMON CONDENSED INTO A FEW SHORT WORDS.

Dear Brother Root:—We heard such a good sermon last Sunday that I am constrained to pass it on, where it will do more good—I. Cor. 10:31: "Whatever ye do, do all to the glory of God." The Christian motive of life, man's chief end, is to glorify God, since we are not our own, but we have been bought with a price. We belong to God, and all that we have comes from him—our time, money, health, opportunities, and all that we have, are *lent* to us from the Lord to be used for him and for his honor and his glory. But then we must not let this service to him be a tax or an unpleasant duty. We must not be satisfied with giving to him one-seventh of our time nor one-tenth of our property, but dedicate, consecrate the whole to him; and if we have the love to him that we owe, giving the whole to him will be a delight, just as Jacob served seven years for Rachel, and it "seemed but a few days;" and then since God is our Father, and such a bountiful giver, we will rejoice in his service, since we are assured that all things work together for good to them that love him; therefore we will account it always a pleasure to "rejoice in the Lord." Rejoice because we are the sons of such a great, glorious, almighty king.

Now, brother Root, I do not wish to interfere with a single one of your Home Talks. I send you this as only so much matter which you can weave in or use as you see best; for I take more pleasure in reading Myself and Neighbors than all the rest.

Hammonton, N. J., Nov. 13. A. H. VANDOREN.

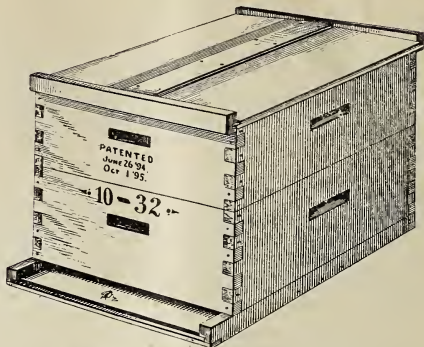


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Please mention this paper.

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containing 10 closed-end standing brood-frames, 15½x6½ net comb space, and 32 5-inch Prize sections 3½x5 in.; adapted to furnish standard Langstroth hives as bodies or supers with full space for top packing for safe wintering and promoting work in supers; forming solid double walls with intervening air-spaces tightly covered, and perfect bee-escapes, with all free of cost; manufactured by The A. I. Root Co., and now being exhibited by the inventor at the Atlanta, Ga., Exposition, in the Dade Co., Florida, division in the Agricultural building. One complete sample hive ready for bees, \$2.25; 10 complete in flat with nails, \$15.00.

For present, address

F. DANZENBAKER, City P. O., Atlanta, Ga.

In responding to this advertisement mention GLEANINGS.

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I. J. STRINGHAM, NEW YORK.

105 Park Place.

BEGINNERS.

Beginners should have a copy of the Amateur Bee-keeper, a 70-page book by Prof. J. W. Rouse. Price 25 cents; if sent by mail, 28c. The little book and the Progressive Bee-keeper (a live progressive 28-page monthly journal) one year, 65c. Address any first-class dealer, or

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COLCHESTER, NEW LONDON CO., CT.

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